UGANDA PROTECTORATE.

ANNUAL REPORT

IMPERIAL MYCOLOGICAL INSTITUTE
27 AUG. 1936

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE

Year ended 31st December, 1935.

(PART I).

PRICE: SHS. 3.

Published by Command of His Excellency the Governor

ENTEBBE:
PRINTED BY THE GOVERNMENT PRINTER, UGANDA.
1936.

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DEPARTMENT OF AGRICULTURE.

ANNUAL REPORT, 1935.

(PART I).

ADDRESSES OF OFFICERS AND TELEPHONE NUMBERS.

		P.O. Box No.	*Telephone No.*
Director of Agriculture	Entebbe ...	2 ...	90
Deputy Director of Agriculture	Entebbe ...	2 ...	97
Head Office	Entebbe ...	2 ...	91
Senior Agricultural Officer	Kampala ...	281 ...	15
Agricultural Laboratories and Kampala Plantation	Kampala ...	265 ...	18
Botanic Gardens	Entebbe ..	60 ...	38
Jinja Office	Jinja ...	67 ...	101-105

Principal Experiment Stations.

(1) Kampala. (2) Serere, Teso.
(3) Bukalasa, Mengo. (4) Bugusege, Bugishu.
(5) The Botanic Gardens, Entebbe.

Subsidiary Stations.

(1) Ngetta, Lango. (2) Wanyange, Busoga.

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DEPARTMENT OF AGRICULTURE.

ANNUAL REPORT

FOR THE YEAR ENDED 31ST DECEMBER, 1935.

(PART I).

During 1935 the Colonial Advisory Council of Agricultural and Animal Health had under review the form in which the Annual Reports of the Colonial Departments of Agriculture are published, and recommended the adoption of some uniform arrangement of the material in these Reports as an improvement upon the varying arrangements existing.

2. The wishes of the Advisory Council have been met insofar as is practicable, but it is considered desirable that the report of this Department should still be published in two parts, as although it is possible to compile a report upon the agricultural conditions obtaining in the Protectorate during any one calendar year, the agricultural year in Uganda does not coincide with the calendar year, and it is therefore necessary in dealing with experimental work on crops to make the report of experimental work of the Department cover the crop year.

To defer the presentation of the report as a whole until the reports of experiments are available would entail considerable delay in publishing a general review of agricultural conditions.

The publication of Part II of the Report will, therefore, be deferred until the results of experiments carried out during the past crop year are available, and will contain a review of the work of the experiment stations, the work of the research sections of the Department dealing with plant breeding work, agricultural chemistry, plant pathology and entomology.

3. It is therefore proposed to confine this part of the report to a review of the agricultural position, the field work, and agricultural education, and to a statement of the expenditure and receipts of the Department of Agriculture.

WEATHER CONDITIONS.

4. It is generally recognised that the farmer in whatever country he may be can be expected to grumble about the weather, and a reference to the reports of this Department for several years will indicate that in most years weather conditions are *abnormal*. 1935 has been no exception.

The dry season, which in most years extends to the end of February or the middle of March ended early and in most areas a rainfall above normal was experienced during February.

Well distributed rains fell until the end of June, but this was followed in most areas by an exceptionally dry spell from the beginning of July to the middle of September. This dry period was again followed by a period of rainfall which continued until the end of the year, in many areas December, usually a dry month, being marked by heavy rainfall.

The effect of the dry period from July to September was to cause a delay in the planting of the main cotton crop, and the bulk of the crop was planted late.

The continuance of the rains until the end of the year was of considerable benefit to the late planted cotton.

In the tobacco areas of Bunyoro district the termination of the rains in June was marked by heavy hail and windstorms, which, in some places, completely destroyed the crop.

5. A full comparative statement of the exports of domestic produce from the Protectorate will be found as Appendix V to this report.

The following table summarises the exports of the more important agricultural products during the last three years :—

Articles.	Unit of quantity.	1933.		1934.		1935.	
		Quantity.	£	Quantity.	£	Quantity.	£
Cotton lint	*bales of 400 lbs. net.*	294,828	2,682,210	285,642	2,927,796	253,242	2,822,739
Cotton seed	*ton.*	81,274	262,539	35,689	85,947	50,685	135,779
Coffee raw	*cwt.*	100,444	210,638	154,298	293,313	125,706	230,976
Tobacco manufactured	*lb.*	10,385	1,412	10,057	1,309	9,012	1,352
Tobacco unmanufactured	*lb.*	469,750	16,338	912,346	26,307	479,220	15,705
Cigarettes	*lb.*	48,890	13,378	64,848	11,737	110,916	13,649
Tea	*cwt.*	269	1,355	247	1,427	338	1,894
Sugar refined	*cwt.*	144,229	128,802	294,685	240,593	253,951	168,358
Rubber, plantation raw	*Centals.*	356	268	3,269	7,111	8,314	20,394
Groundnuts	*ton.*	325	3,096	288	2,583	1,370	16,460
Sesame	*ton.*	2,659	30,382	1,375	14,264	1,620	17,629

Notes on the Major Economic Crops.

COTTON.

6. *1934-35 Crop.*—The following table gives details of the acreages and sales of seed cotton in respect of the 1934-35 crop and that of the preceding season :—

Province and District.	Acreage.		Sales in tons.		Average yield per acre in lbs.	
	1933-34.	1934-35.	1933-34.	1934-35.	1933-34.	1934-35.
Buganda.—						
Mengo	164,022	227,223	30,437	36,821	415	363
Entebbe	106,037	87,395	16,016	15,927	338	408
Masaka	33,914	50,756	10,327	12,043	682	531
Mubende	46,905	59,857	8,844	11,532	422	432
Eastern.—						
Busoga	225,048	233,996	39,305	28,508	391	273
Budama	68,082	72,154	8,859	4,343	292	135
Bugwere	124,480	129,241	13,903	6,993	250	121
Bugishu	45,330	45,579	3,200	2,052	159	101
Teso	112,222	112,326	11,286	5,995	225	120
Northern.—						
Lango	78,736	78,440	11,161	9,651	317	276
Bunyoro	28,986	28,000	2,740	2,695	212	216
Gulu	21,033	21,800	3,328	5,202	354	535
Chua	18,000	21,107	1,716	2,617	214	278
West Nile	5,547	7,137	543	1,210	219	380
Western.—						
Toro	12,160	10,588	628	726	116	154
Totals	1,090,502	1,185,599	162,293	146,315	333	276

The total sales of 146,315 tons of seed cotton on a 30 per cent. ginning outturn are the equivalent of 245,809 bales of 400 lbs. nett. Actual exports, however, during 1935 totalled the equivalent of 253,242 bales of 400 lbs. nett.

It is estimated that the growers received an average price of Shs. 11/73 per 100 lbs. for seed cotton as compared with an average price of Shs. 10/14 in the previous season.

On account of the early onset of the rains, the grade of the crop was lower than the very high grade of the previous crop.

Prior to the opening of the 1934-35 cotton buying season, the original Buganda—Toro Zone was sub-divided into three zones the Mengo—Entebbe Zone, the Masaka Zone and the Mubende—Toro Zone.

Ginning pools or the equivalent were formed in all zones, and operated smoothly.

The operation of the pools since the commencement of the Cotton Zone Ordinance has led to a reduction in marketing and ginning costs.

As a result of the first year's experience of minimum price fixing, Government amended the formula so as to discriminate in overhead costs between zones of high and low bale out-turn per ginnery, with the result that prices in zones of high bale out-turn are more favourable to the grower than is the case in zones of low bale out-turn.

Local values for cotton seed were higher than during the previous years, and this resulted in an increase in the exports of cotton seed from 35,689 tons in 1934 to 50,685 tons in 1935.

7. *1935-36 Crop.*—Planting of the 1935-36 crop was considerably interrupted by the dry spell experienced from July to September, during which period in many areas the bulk of the planting normally takes place.

No large scale introductions of cotton seed of new strains took place in any areas, but in the South Lango Zone 369 tons of cotton seed from ginneries in Busoga were distributed.

This distribution was organised as a precautionary measure against the spread of pink bollworm from the infected area of North Lango to the Eastern Province in which latter area pink bollworm has so far not been observed.

In the Usuku County of Teso district where blackarm had been rather prevalent in the 1934-35 crop, seed for planting was provided from the segregated area in South Teso, some 210 tons of "clean" seed being distributed.

us districts

CORRIGENDUM.

Agricultural Report, Part I, 1935.

On page 5, in the table dealing with cotton acreages, *substitute* the following figures against Bugwere and Budama under "EASTERN PROVINCE":—

	1934.	*1935.*
Bugwere	129,241	127,658
Budama	72,154	74,083

1935.

3,618
3,678
2,027
6,053
5,376
5,408
4,083
27,658

Bugishu	45,579	44,019
Teso	112,326	116,812
TOTAL ACRES ...	593,296	567,980
NORTHERN.—		
Lango	78,440	90,689
Bunyoro	28,000	24,626
Gulu	21,800	27,700
Chua	21,107	24,000
West Nile	7,137	10,800
TOTAL ACRES ...	156,484	177,815
WESTERN.—		
Toro	10,588	15,803
GRAND TOTALS ...	1,185,599	1,366,974

As a result of the experiments carried out over the past few years it was decided to encourage early planting of cotton in North Teso and practically the whole of the Usuku crop was planted before the end of June. Indications at the end of the year were that this early planting would result in a substantial increase in production in that area.

In most areas a considerable replanting of the main crop was necessary owing to the bad stand consequent upon unsatisfactory weather conditions at planting time.

Much of the crop in areas West of the Nile was late planted, but the continuance of the rains until the end of the year very considerably improved the prospects of this late cotton.

The condition of the crop at the end of November was considered such as to warrant an estimate of 305,000 bales, and at the time of writing it appears probable that the actual crop will be at least equal to the estimate.

World cotton prices were well maintained during the year, and the improvement in the statistical position appeared to give no grounds for anticipating a decline. At the end of the year, however, the American market was affected by the adverse ruling of the United States Supreme Court on the constitutionality of the various Federal crop control programmes including cotton, and the uncertainty as to the action which the United States Government would take created a weak market, and a declining price level.

COFFEE.

8. The acreage under this crop continues to expand, more especially the area grown by natives. Unfortunately no improvement in prices is to be recorded for the year. Prices for basic coffees declined during the first half of the year, and the slight recovery in prices about the end of September was not maintained.

The average price realised in London for Uganda *arabica* during 1935 for coffee sold at first offering at auction was Shs. 48/10 as compared with Shs. 64 in the previous year.

The exports of raw coffee totalled 125,706 cwts. valued at £230,976 as compared with 154,298 cwts. valued at £293,313 in the previous year.

There is a considerable increase in the amount of Uganda coffee imported into Canada and the United States.

Arabica Coffee.

9. In the Bugishu district of the Eastern Province, there are no signs of a decline in the interest of the natives in the coffee crop.

A total of 1,217,449 trees were distributed to growers, representing an additional acreage of 1,014 acres and it is estimated that the area under *arabica* in Bugishu now amounts to 5,027 acres as compared with 4,013 acres at the end of 1934.

Distribution was carried out according to lists drawn up by Chiefs and instructors some time previously. As far as possible, new cultivators received 100 trees each and others 50 each free of charge, any in excess being paid for at the rate of ten cents per tree, over two thousand shillings being credited to Native Administration Funds from this service. In no case is distribution of trees made to cultivators whose existing plots are not satisfactorily cultivated and in certain small administrative units trees were withheld entirely until cultivation of existing plots improved.

Approximately half the tax paying population received trees, and although no comparable figures are available for previous seasons, the total number of "beginners" (9,679) receiving trees was higher than ever before.

During the year considerable progress was made in carrying out an *Antestia* survey, using pyrethrum spray, to ascertain the intensity and spread of this pest in Bugishu. In no case has a greater infestation than three bugs per tree been observed. In two areas where *Antestia* appears to be the most prevalent, the cherry/clean coffee ratio was tested. At Buluchekke the results indicate that *Antestia* damage is not serious, and although at Bupoto the ratio is high, it was found that Stephanoderes was responsible for a considerable proportion of the "lights."

An interesting development in Bugishu is the formation of co-operative pruning societies. The first operating at Bulago in the North Bugishu hills, was an unqualified success considering that natives had no previous experience of this kind. About fifty members were admitted on payment of two cents per tree to be pruned, the Society purchasing pruning implements, and the pruning being done by pruners trained by this Department and paid by the Society. About 5,000 trees in all were pruned, and there was a small balance on the season's working. Further societies have been formed at Buwalasi and Budadiri.

During the year the area in which marketing of the crop is controlled solely by the Bugishu Coffee Scheme operating under the Native Produce Marketing Ordinance by means of exclusive licences, was extended by the closing of Central

Bugishu. The Bugishu Coffee Scheme is now sole buyer in the whole of South and Central Bugishu and in a small area in the North Bugishu hills. The chief developments in capital works were the erection of thirteen new pulping stations, a large concrete drying barbecue and store at Bubulu, two smaller barbecues at the Nampanga sun drying centre in North Bugishu, two barbecues and a store at the Bunkoko drying centre in Central Bugishu, a godown at Mbale Railway Station and a rotary drier at Bubulu.

The total crop marketed in Bugishu for the crop year 1st July, 1934 to 30th June, 1935, amounted to 1,378 tons of parchment coffee as compared with 985 tons in the previous year.

Owing to the late ripening of the crop some congestion occurred at the drying centres with the result that the quality of coffee dried at these centres was adversely affected.

In regard to the 1935-36 crop, the picking season followed a normal course. Low elevation pulping stations were opened for the purchase of cherry in August and high elevation stations a month later.

As a result of tests made as to the effect of fermentation period on quality, an important modification was made at all pulping stations under the control of the Bugishu Coffee Scheme in the 1935-36 season. The fermentation period was increased from one day to 36 to 40 hours. A distinct improvement in quality of the bean has resulted. Colour is good, there is a marked brightness, the liquor is of good body and acidity, and reports indicate that the coffee prepared by the Bugishu Coffee Scheme under this system commands a substantial premium over ordinary native prepared coffee purchased by outside buyers in the areas of Bugishu, in which the Bugishu Coffee Scheme does not operate.

Under the terms of the exclusive licences issued to the Bugishu Coffee Scheme the prices paid to the growers are fixed by the Director of Agriculture, and prior to the 1935-36 season the policy had been followed of paying one fixed price throughout the season.

Such a procedure is attractive to the native growers and given reasonably stable conditions in world coffee markets may be a desirable policy. Under the present disturbed market conditions, however, featured by falling markets, it is obvious that such a policy may have serious financial results, where there is a lag of three or four months between purchase from the grower and sale in the ultimate market.

A meeting was held in Jinja in October, 1935, at which were present the Deputy Director of Agriculture, the Acting Auditor, the Senior Agricultural Officer, Jinja, the Agricultural Officer, Bugishu and the Acting Manager of the Bugishu Coffee Scheme. As a result of the meeting it was decided to recommend that price fixing should be based on weekly quotations of prices ruling in the Mombasa market and that in calculating the prices to the growers account should be taken of the fixed capital invested in the three areas of Bugishu operated by the Bugishu Coffee Scheme, and the operating costs as represented by salaries, transport, etc., in each area. Under this system coffee purchased as cherry was charged with the costs of pulping including depreciation and interest on the capital invested in the pulping stations; coffee purchased as parchment was not charged; coffee cleaned at Bubulu was charged with the costs of curing including depreciation and interest charges on the Bubulu factory; coffee purchased in parchment or as cherry which was subsequently cleaned at Kilindini was charged with the cost of cleaning at Kilindini. It may be of interest to record that on an assumed total purchase by the Bugishu Coffee Scheme of 1,000 tons of parchment equivalent, purchased as cherry, the total charges incurred in pulping, transport, drying, curing and shipping to Mombasa for export *via* Kilindini work out at approximately Shs. 243 per ton for South Bugishu in the case of coffee cleaned at the Bubulu factory, Shs. 272 per ton for North Bugishu and Shs. 264 for Central Bugishu, the coffee from the two latter areas being cleaned at the coast.

The above costs refer to a ton of coffee in parchment.

It may be of interest also to add that the estimated cost of pulping or in other words the additional amount which could be paid to the grower if he pulped his own coffee by hand works out at Shs. 46/30 per ton of parchment in South Bugishu and Shs. 50/12 per ton of parchment in Central and North Bugishu.

The above figures are put forward, to show the position of the Bugishu Coffee Scheme *vis-à-vis* the outside buyers who incur no overheads in preparation of the crop up to the parchment stage. It is, however, becoming increasingly apparent that apart from any question of the responsibility of Government to take all steps to ensure that native produce comes up to a reasonable standard of quality the additional costs involved in providing pulping and drying facilities are being more than covered by the added value of the coffee thus treated.

10. In addition to the Bugishu area development of *C. arabica* cultivation by natives is going ahead in certain parts of the Western Province.

In the higher areas of Toro district the area under native grown *arabica* increased from 578 acres in 1934 to 610 acres in 1935. Where conditions permit *robusta* types are encouraged to the exclusion of *arabica* in Toro district.

In the Ankole district the acreage under native grown *arabica* was increased during the year by 541 acres bringing the estimated total acreage in that district to 3,791 acres.

The greatest drawback to rapid expansion of the industry, and proper attention to the crop, in Ankole is the custom of the natives to leave their homes for considerable periods each year to work as paid labourers in other parts of the Protectorate. Whilst this practice is actually an economic necessity in the case of the young people and of many others, it appears in the case of many coffee growers who could well afford to stay at home to have developed into a habit.

The result is that many plots are neglected and in some instances the crop, often of greater value than the possible earnings of the owner elsewhere, is abandoned. A similar phase was passed through in Bugishu, where many of the coffee growers did at one period regularly migrate over Mount Elgon to work as labourers on the Kenya coffee estates to the neglect of their own coffee plots. With the realisation that they can obtain a considerable income by cultivating in their own country, however, this migration of the Bagishu has diminished very considerably. In Bugishu when any coffee owner abandons his coffee thereby rendering it a source of danger to surrounding plots on account of disease and pests, the Native Administration take over the plot, and either maintain it and sell the crop or sell the plot to some other aspiring coffee grower, and it is possible that some similar action may have to be considered in Ankole. A comparatively heavy infestation of *Antestia* was present in the district throughout the year. Hand picking of the pest was encouraged as far as possible but the results obtained were disappointing.

With the posting of an Agricultural Officer to Kigezi district it has been possible to pay more attention to the organisation of coffee growing than had been possible in the past. There are now twenty-eight coffee nurseries in this district which are maintained by labour supplied by the Native Administration and supported by departmental funds. At the end of the year there were approximately one million seedlings in the nurseries. During the year 457,000 seedlings were issued to 13,000 growers, and it is estimated that approximately 1,800 acres were under coffee *arabica* at the end of the year.

In this district also *Antestia* is a serious pest in the lower lying coffee areas in the north. Hand picking of the bug was carried out weekly in all gombololas, but again the results were disappointing.

Robusta Coffee.

11. The main native grown *robusta* area is situated at altitudes below 4,500 feet, by far the largest amount is produced in the Buganda Province.

In this province the Buganda Native Government now provide funds for the establishment and maintenance of central coffee nurseries.

Progress to date has been confined to the Mengo and Masaka districts where there are seven and nine nurseries respectively. It is hoped later to establish similar nurseries in the Entebbe and Mubende districts.

At the end of the year the nurseries in the two districts contained approximately one-and-three-quarter million seedlings for distribution in 1936. The bulk of the coffee being grown in the central nurseries is of the "Nganda" type, which possesses a naturally spreading habit and requires practically no pruning, other than the rubbing off of unwanted suckers or "gormandizers."

In previous reports I have felt obliged to call attention to the low standard of coffee management which had obtained in Buganda, and it is pleasing to be able to report a decided improvement during the year. Many of the native plots are being mulched with elephant grass (*Pennisetum purpureum*) and another interesting development is the construction of concrete drying floors by native coffee owners. This development is particularly noticeable in the Entebbe district where at the end of 1935 twenty of these drying floors had been erected. One of the complaints against Uganda native *robusta* has been that some consignments are found to contain small pieces of gravel about the size of the coffee bean. The inclusion of these in the coffee is the result of drying the coffee on the ground, and the elimination of these stones during curing is almost impossible short of hand picking.

The development of concrete barbecues should go far to eliminate this trouble, and I am pleased to record that this development is being assisted by the principal coffee buyers who are paying a small premium for coffee dried on these barbecues.

Marketing of the native grown *robusta* coffee in Buganda has so far been carried out in a rather haphazard way much of the crop being purchased by the small shopkeeper for re-sale to the major coffee merchants. Most of the coffee is sundried in the cherry and rough hulled in *Kinus* (Native mortars) or locally made wooden hullers.

The practice of hulling in *Kinus* has been actively discouraged as such treatment often leads to a large proportion of broken beans.

During the year a certain number of mechanical hullers were erected by the primary buyers and others and although *prima facie* this development would seem desirable in order to save transport costs, it has been found in practice that insufficient care is taken in ensuring that the coffee hulled in this fashion is sufficiently dry, and the result is a considerable amount of badly damaged coffee. In December it became necessary to cancel the licences of certain buyers who were wilfully purchasing wet coffee and the Coffee Board after consideration of this development recommended that treatment of the coffee between purchase from the grower and treatment in the licensed curing works should be prohibited.

After preliminary discussions with the Buganda Native Government it was agreed that the marketing of the Buganda coffee crop should be organised under the Native Produce Marketing Ordinance, and it is hoped to establish market centres with a limited number of buyers at each centre during 1936.

12. Another centre of development of *robusta* coffee growing by natives is the Bwamba County of Toro district. The acreage under *robusta* coffee at the end of 1935 was estimated to total approximately 800 acres.

Since 1933 marketing of the Bwamba coffee has been organised under the Native Produce Marketing Ordinance, the Bwamba County being a "declared area" with one exclusive licence issued to an Indian buyer. Weekly prices to the grower are fixed on the basis of prices ruling in Kampala for native *robusta*, and steps are taken to inform growers of the weekly price changes.

This system of marketing is largely responsible for the satisfactory progress in planting and in the care of the plots which has become increasingly noticeable during the past two years. Formerly there was a tendency for growers to become discouraged and the standard of cultivation was low. There has been a very marked decrease in the incidence of Stephanoderes on *robusta* in Bwamba following the successful introduction by the Entomologist of the Prorops parasite. Further surveys have shown that the natural spread of the parasite is slow, and additional parasitized material has been introduced at centres, other than the original three centres, where the incidence of the pest is serious.

13. No further curing works were licensed under the Coffee Grading Ordinance during the year, the number licensed being eight, of which the Bubulu factory is owned by the Bugishu Coffee Scheme, four are owned by firms who are also buyers of native coffee, two are situated on non-native coffee estates, and the eighth is situated at Port Bell and owned by a firm who do not purchase native coffee. The total amount of coffee dealt with by these curing works in respect of which export certificates were issued was 4,611 tons of which by far the largest proportion was cured at the four curing works owned by firms dealing in native coffee.

The number of complaints received during the year in respect of parcels of coffee alleged to be below the grade specified was very small, and there was no evidence and it was recommended that a Government Inspection Service should be instituted. satisfactorily.

The question of grading was reviewed by the Coffee Board during the year and it was recommended that a Government Inspection Service should be instituted. This matter was still under consideration at the end of the year.

TOBACCO.

14. At present organised native tobacco cultivation is confined to the Northern Province and during 1935, approximately 2,300 acres were planted in the Bunyoro district, and 1,075 acres in the West Nile district.

In both districts nurseries are planted in January or February and harvesting takes place from July onwards.

In Bunyoro district weather conditions during the first half of the season were excellent. Good planting weather was experienced and a very good stand of plants was obtained in most places.

June, however, proved the most disastrous month for the tobacco crop that has been experienced since the crop was introduced to Bunyoro. Heavy hail and wind storms caused severe damage and, in some places, completely destroyed the crop, and the unusually cool and wet conditions which prevailed throughout that month caused serious outbreaks of "rust."

Exceptionally hot and dry weather accompanied by high winds occurred during the latter part of July when the leaf was being harvested, and this caused considerable loss owing to the leaf drying out too quickly in the barns.

Owing to the unfavourable conditions under which the greater part of the crop was harvested and cured, a far greater proportion of the leaf than usual had to be discarded during grading. The crop proved a difficult and unsatisfactory one to handle and many of the growers were disappointed at the small return obtained.

In spite of the difficulties, however, grading showed some improvement, but far too many growers still do not pay sufficient attention to this operation and make little attempt to get the best possible return from the crop.

The total crop amounted to 825,048 lbs.

Prices for the season were fixed at 27 cents per lb. for No. 1 grade, and 17 cents for No. 2—an increase of one cent per lb. on the 1934 prices.

Growers received a total of Shs. 173,225/76 an average of 20·99 cents per lb. compared with an average of 20·85 in 1934. The average amount received per grower, however, was roughly only Shs. 26 against Shs. 39 for the previous season.

Buyers were required to pay a cess of three cents per lb. on all native grown tobacco purchased in Bunyoro.

A refund of cess at the rate of two cents per lb. was made on all tobacco exported to destinations outside of the East African Territories, and for the purpose of cess refund on "strips" it has been agreed that weights shall be calculated on baled weight plus 30 per cent.

Part of the cess fund is used to compensate growers who have their tobacco accidentally destroyed by fire during curing operations. Seven barns, one of which was struck by lightning, were burnt during the season, and compensation amounting to Shs. 383/25 was paid to forty-three growers.

Eight licences were issued, under the Native Produce Marketing Ordinance, for the purchase of leaf tobacco in Bunyoro. Three of these were held by local manufacturers and the remainder by dealers, who re-grade the leaf for export and depend chiefly upon the local manufacturers for the disposal of the lower grades.

The established manufacturers, however, now hold fair stocks of leaf, and consequently have not been inclined to purchase low grades during the past season, with the result that dealers have experienced some difficulty in disposing of these grades, and had the crop been a normal one, most of the buyers would have been left with the lower grades on their hands.

Applications for licences, which have to be submitted before the crop is planted, revealed a large increase in the demand for tobacco. It was not considered possible or advisable to attempt to produce the amounts asked for, and in fact, had the full amount been produced, dealers would have found themselves in serious difficulties with regard to the disposal of their purchases.

In the West Nile district, a disappointingly small crop was harvested in 1935. Requisitions amounting to 274,000 lbs. were approved but the total quantity of marketable tobacco produced only amounted to 88,821 lbs. Prices for the season were fixed at 26 cents per lb. for No. 1 grade and 16 cents per lb. for No. 2 grade. The average price per lb. obtained by growers was 21·29 cents compared with 19·58 cents in 1934. The total cash value of the crop was Shs. 18,906/06 compared with Shs. 27,384/40 for the corresponding period in 1934, and the amount of the tobacco cess collected was Shs. 2,541/66. Grading, in the opinion of the principal buyer, represented an improvement on that of 1934 and previous years. Of the 1,075 acres planted 284 were totally destroyed by floods or hailstorms. The yield per acre was only 112 lbs. as compared with 399 lbs. for the same crop of the previous year. Tobacco cultivation in the West Nile cannot be regarded as having become in any way firmly established. Apart from temporary adversities such as bad seasons the factor which undoubtedly most retards development is the intense conservatism of the people and their reluctance to accept innovations, the value of which they cannot fully grasp. The total area in the West Nile suitable for the growing of tobacco is considerable and, provided it is found possible to overcome the difficulties mentioned, there appears to be no reason to doubt that large quantities of air cured tobacco especially can be produced in the district. In the meantime, however, expansion is likely to be slow and the immediate aim is to consolidate the position of those growers to whom the crop has already been introduced and to bring in new growers only in such numbers as can readily be instructed.

Of the 88,821 lbs. of leaf produced, 19,643 lbs. were air cured types (White Burley and Amorello). Just over 4,000 lbs. of this amount of air cured leaf was purchased by Government for the purpose of sending trial shipments abroad, but it was only possible to use a proportion of this for the purpose, the rest being sold locally without loss to Government. Two licences under the Native Produce Marketing Ordinance were granted during 1935 in the West Nile district.

Three new factories for the manufacture of tobacco and cigarettes were opened in Uganda during the year, bringing the total up to five. It remains to be seen whether the demand for the locally manufactured products is sufficient to warrant the increase in the number of factories which has taken place, not only in Uganda, but also in the neighbouring territories.

Through the courtesy of the Royal Packet Navigation Company (K.P.M), Shipping Line, who offered to carry and distribute samples, free of charge, sample bales of both fire-cured leaf from Bunyoro, and air-cured leaf from the West Nile, have been sent by the Department to several ports in the Far East.

Efforts are also being made to establish connection with manufacturers in other directions.

The demand for high grade leaf for the English market has continued and prices have been fairly satisfactory, but the disposal of the lower grades still presents a serious problem.

The Government Tobacco Packing Factory at Masindi closed down at the end of February and re-opened again on the 6th September and remained open to the 20th December. During the year, however, the factory was actually working at full capacity for only three months.

790,874 lbs. of leaf (packed weight) were re-conditioned and baled during the year.

Three new godowns were erected at the factory and storage facilities for roughly 800,000 lbs. are now available.

An outbreak of fire occurred in one of the drying rooms at the factory on the 30th November. The fire spread to an adjoining drying room and approximately 6,000 lbs. of leaf was destroyed.

Work at the small experimental station in Bunyoro was confined almost entirely to seed production.

Experiments with the production of flue-cured tobacco carried out some years ago gave promising results and, in conjunction with the British-American Tobacco Company further experiments were carried out at Masindi during the past season and the results obtained were again satisfactory.

Leaf of excellent colour was produced and there is no doubt that this type of tobacco could be produced in many parts of the country.

A certain amount of this type of leaf is at present being imported by one firm of manufacturers and, I understand, other firms are interesting themselves in the manufacture of "Virginian" cigarettes from it.

Whether the imported leaf can be entirely replaced by locally grown tobacco it is not possible to say without larger experiments and trials. Locally grown leaf could undoubtedly be used for blending purposes.

With a local market ready to absorb a certain amount of the crop it would appear that flue-cured tobacco is a crop which might be taken up by non-native planters or with careful organisation and co-operation, by some of the more advanced natives.

Some useful samples of air-cured leaf were produced in several places in the Eastern Province during the year.

Exports of unmanufactured tobacco from Uganda during the year amounted to 479,220 lbs.

This shows a considerable decrease on the 1934 figures, almost entirely due to the establishment of a factory in Kampala by a firm from Dar es Salaam, who previously imported large quantities of leaf from Bunyoro for manufacture at Dar es Salaam.

Shipments to England during the year amounted to approximately 60,000 lbs.

Whilst every caution is needed in expanding the area under tobacco there appears to be no doubt that the home market can absorb a limited amount of Uganda fire-cured leaf, provided it is well graded and packed.

In East Africa itself there is still considerable room for expansion in consumption, and as the greater part of the locally manufactured tobacco finds a market amongst native consumers where the price factor is an important consideration, the reasonable policy to pursue would appear to be one of exporting overseas the higher grades and utilising the lower grades for local manufacture.

It is evident that if the present demand for our native grown tobacco continues, extension into other areas besides Bunyoro and West Nile will be necessary. During 1936 it is proposed to test the possibilities of parts of Busoga district for the supply of both fire-cured and air-cured tobacco to the British-American Tobacco Company's factory at Jinja.

If successful such a development would enable the requirements of other local manufacturers and exporters to be met from Bunyoro and West Nile.

At present the area cultivated by each tobacco grower is strictly controlled, as it is essential that both field operations and curing and grading should be carefully carried out if reasonable standards of quality are to be maintained.

SUGAR.

15. The total acreage under cane on the two estates Lugazi and Kakira, producing plantation white sugar shows a considerable increase as compared with the preceding year, the figures being 13,000 acres as against 10,842 acres.

The total production of plantation white sugar amounted to 25,394 tons.

During the year a significant development in the sugar industry was the large drop in the price of sugar following on a voluntary agreement amongst the members of the Sugar Distributor's, Limited, the selling organisation of the East African Sugar Manufacturer's Association. The result has been that sugar has been retailed at as low a price as ten cents per lb. and there has been a marked increase in consumption.

Whilst it is doubtful whether the present price level is remunerative to all the millers, increased consumption within East Africa is a pressing necessity in view of the possibility of international restriction of exports, and there is no doubt that once consumption has been established at a satisfactory level by means of low prices it should be possible for the whole of the production of the existing mills of East Africa to be consumed locally.

In this connection a comparison between Mauritius and East Africa is interesting and instructive. In Mauritius with a population of approximately 390,000 the consumption of locally manufactured sugar is approximately 10,000 tons per annum, whereas in the three territories of Kenya, Uganda and Tanganyika with a population of approximately 11,700,000 the consumption of locally manufactured sugar in 1934 was only approximately 15,000 tons.

The Commission of Enquiry appointed in 1934 to enquire into the East African sugar industry reported to the Governments early in 1935, and the three Governments agreed to ask the millers of the three territories whether they wished legislation to be introduced instituting a quota pool with a capacity of 30,000 tons for the Kenya and Uganda millers and an additional amount for the Tanganyika Territory mill when that mill comes into production.

The quotas allotted in this pool would be fixed on the basis of the figures supplied by the Commission assessing the maximum economic out-turn of which it is considered each mill capable, under conditions then existing.

In the event of Government introducing legislation it would include provision for the fixing of maximum prices within East Africa.

This matter was still under consideration at the end of the year.

TEA.

16. During the year fifteen licences to plant tea were issued under the Tea Ordinance, and a total of 424 acres was planted. The acreage under tea at the end of the year amounted to 1,690 acres.

The bulk of the seed was supplied from tea seed bearers in Uganda and from the East African Agricultural Research Station at Amani, Tanganyika Territory.

RUBBER.

17. The total acreage under para rubber at the end of the year amounted to 11,837 acres and with the rise in price which occurred during 1934 and continued during 1935, tapping was re-commenced on many estates and the exports rose from 3,269 centals in 1934 to 8,314 centals in 1935.

Pests and Diseases.

18. The Entomologist appointed last year for special work on Pink Bollworm has confined his activities to a study of that pest and has carried out a survey of the areas affected.

Whilst he has not yet completed his studies, it may be stated at this stage that his studies on the present crop indicate that the pest was not responsible for any considerable amount of damage.

Preliminary work by the Entomologist indicates that carry over cotton plants are the major cause of re-infestation of the succeeding crop, and it is obvious that a strict application of the uprooting and burning order and the institution of a definite close season for cotton are necessary measures.

The development of cotton wilt disease, caused by a *Fusarium*, on cotton in Buganda is becoming rather serious and it is proposed that the Mycologist should make a study of this disease one of his major projects. It would appear that the only action possible in combatting this disease is the breeding of wilt resistant strains, and it is proposed, concurrently with selection locally, to import seed of known resistant strains from America and India for study and possibly for use later in hybridisation, if selection amongst local material proves unsuccessful.

The invasion by *Locusta migratorioides* which commenced in 1931, can now be said to be over, and no reports of this species were received during the year.

During the year, however, swarms of the Red Locust, *Nomadacris septemfasciata*, entered the Protectorate from the South and caused some damage to native crops.

Work of the Field Division.

19. During the year the organisation of the Field Division was re-cast. Formerly the Field Division had been divided into two, with a Senior Agricultural Officer in charge of each, one division covering all areas east of the Nile and comprising

the whole of the Eastern Province, and the Lango, Gulu and Chua districts of the Northern Province, and the other including the whole of the Buganda and Western Provinces and the Bunyoro and West Nile districts of the Northern Province.

With the posting of an Agricultural Officer to Masindi, the provincial headquarters of the Northern Province, this Officer was placed in charge of agricultural activities in the whole of the Northern Province and the areas of the two Senior Agricultural Officers reduced accordingly.

20. Apart from the normal routine duties of the Field Division such as organisation of cotton seed distribution, encouragement of good standards of cultivation, supervision of marketing, and the district experimental work, the results of which will appear in Part II of this Report, there are several lines of work which appear to merit special mention.

During 1935 an Agricultural Survey Committee to deal with soil deterioration problems was set up with the Director of Agriculture as Chairman, the other members being the Director of Medical Services, the Provincial Commissioner, Buganda, the Provincial Commissioner, Eastern Province, the Provincial Commissioner, Northern Province, the Provincial Commissioner, Western Province, the Director of Veterinary Services, the Director of Geological Survey, the Conservator of Forests, and the Game Warden.

It has been evident for some time that with population beginning to increase as a result of the activities of the Medical Department, with cattle increasing greatly in numbers due to the efforts of the Veterinary Department and with crop cultivation increasing very rapidly, the time is rapidly approaching when problems concerned with soil deterioration will become of major importance.

The process is slow and insidious and it is difficult to take stock of the true position without making fairly detailed and extensive studies.

In 1931 a commencement was made by the Senior Agricultural Officer, Kampala studying and reporting upon a small administrative unit in Buganda. Additional reports were received later and during 1935, it was decided that these reports were of sufficient value to warrant each Agricultural Officer completing as routine a survey of one mutalla or sample plot in each year.

It should be explained that a mutala is a small administrative unit containing possibly fifty to one hundred families, and under the administration of a minor Chief.

Each Agricultural Officer now spends up to six weeks in one mutala in the spring and autumn of the year, and gathers information on the many aspects of social life therein. Such information includes *inter alia* details of the acreage under each crop in the long and short rains, the average size of holding occupied by family units of various sizes, the rotations practised, the area available for arable cultivation, grazing and timber, the sources of domestic water supply, details of livestock in the area, and livestock management practised. It also includes details of population with the occupations of individuals, religions, diet and such other information as is necessary to be able to frame a comprehensive picture of the social life in that particular unit.

21. The results so far obtained are proving extremely interesting. We are obtaining pictures of areas in which the density of population is too great to allow of adequate resting periods for the agricultural lands, of other areas in which adequate land is available, more especially if additional water supplies can be made available, and of areas in which what might be called a balanced population exists.

The Agricultural Survey Committee has now adopted this sample plot method as the basis for its work and the mutala or sample plot survey reports are being turned over to that Committee for analysis and for recommendations as to comprehensive action that will be required to deal with the important problems that are emerging.

For the purpose of giving a clear picture of the nature of these sample surveys I have included as an appendix to this Report the report on the Namungalwe Mutala in Busoga. It may be noted that the acreage per family of four-and-a-half persons of 8·4 acres compares unfavourably with that of thirteen acres used on the small holding established at Bukalasa for hand cultivation inclusive of the plantain garden, where of the thirteen acres, two-and-a-half acres are under plantain garden,

three acres under economic crops, three acres resting under grass, three acres under coffee, and one-and-a-half acres under food crops and buildings, etc. Coffee is not grown in this particular mutala and the comparison is therefore 8·4 acres as against ten acres at Bukalasa. The Bukalasa holding is designed to provide just sufficient resting land to enable it to be cultivated in perpetuity without the risk of soil deterioration. Namungalwe represents an area in which the size of the average holding is becoming too small to enable a sufficient amount of land to be rested annually.

As appendix to the Report is given the questionnaire which is now being used in order to obtain standardisation of the reports.

22. In connection with the Teso district where on account of naturally poor agricultural conditions combined with an easily erodable soil, and a large and increasing cattle population there has been a gradual deterioration in fertility, a small informal Committee was appointed, at my suggestion, consisting of representatives of the Provincial Administration, Agricultural, Veterinary and Forest Departments, to report on conditions obtaining in that District and to put forward proposals for their amelioration.

A very interesting and comprehensive study of the position was made and the report has been dealt with by the Protectorate Agricultural Survey Committee and is now under consideration by Government.

The soil deterioration position in Teso district is worse than in most parts of the Protectorate and is brought out very clearly in the sample plot survey made in the atongole or mutala of Ajuluku the report of which is attached as an appendix.

A comparison between Namungalwe and Ajuluku is interesting. In the former it has been noted that the average holding is becoming too small to enable sufficient land to be rested. In the latter the average holding has become much too small the amount of resting land is entirely inadequate and soil deterioration is proceeding rapidly.

Soil deterioration can be measured by cotton yields over a period of years and the following table shows what is happening in typical parts of Teso :—

Period.	Serere and Kasilo. (lbs. per acre)	Ngora and Kumi. (lbs. per acre)
1921-22 to 1925-26	360	231
1922-23 to 1926-27	347	260
1923-24 to 1927-28	343	260
1924-25 to 1928-29	302	253
1925-26 to 1929-30	243	187
1926-27 to 1930-31	273	195
1927-28 to 1931-32	280	186
1928-29 to 1932-33	273	183
1929-30 to 1933-34	271	185
1930-31 to 1934-35	286	196

It may be explained that Ajuluku is a typical area in the Ngora Saza of Teso.

Needless to say this whole question of soil deterioration is under very active consideration by Government and various remedial measures involving the closest co-ordination between the Agricultural Department and the Forest, Veterinary, Public Works Department (Water Boring Section) and Provincial organisations are being devised.

Certain departmental activities were carried out in Teso during the year in addition to active co-operation in connection with the special work referred to above.

The Agricultural Officer with the assistance of the District Commissioner carried out special propaganda for the better utilisation of farmyard manure and was able to arrange for the construction of fifteen covered cattle sheds for twelve Chiefs and three Agricultural Instructors as demonstrations in the preparation and utilisation of farmyard manure.

In the question of ploughing, also, attention was concentrated upon obtaining a better standard of ploughing by the thirteen thousand ploughs now in use in that district.

The rapid expansion in the number of ploughs has made it difficult for adequate instruction to keep pace, and there is no doubt that in many cases the standard of ploughing practised in the past has been very low, much of the land being only "skimmed."

Ploughing matches were organised in every county in the district, and these proved very popular, the standard of work being higher than in previous years. Women are now taking to the plough, and the women's class in these ploughing competitions was well supported.

Demonstration duplicate plots were laid down at numerous centres to show the value of good as against bad ploughing. The one plot was twice ploughed to a reasonable depth and subsequently hoed as often as necessary.

The other was "skimmed" as many natives are accustomed to do, and the grass was allowed to grow up between the furrows. Hoeing was done occasionally, but no more than would produce the appearance of the average native plot. To the eye there was a notable difference in the yield prospects of the cotton grown on the well cultivated plots.

The results of the propaganda undertaken by this Department and the Administration have surpassed expectations a very satisfactory improvement having taken place in a comparatively short time.

23. Under the guidance of the Government Entomologist, attempts are being made to improve the quality of beeswax produced from native hives and new type hives in which queen excluders are used are being taken up in parts of the Western and Buganda Provinces. During the year Agricultural Officers in the various districts purchased beeswax from native beekeepers and it is intended to send home for sale, after refining in Kampala, one ton of wax.

It is intended to control the beeswax industry by organising the marketing of this produce under the Native Produce Marketing Ordinance by means of exclusive licences as it is essential that a high grade, unadulterated product should be marketed if any considerable expansion can be looked for.

24. During the year Agricultural Officers organised two agricultural shows. The one at Mbale in November was a part of a Welfare Exhibition and the agricultural section consisted of a model holding similar to those laid down for teaching purposes at the Serere Experiment Station. The holding occupied eight-and-a-half acres, six acres being under economic crops rotation, half acre being under plantains as these are grown to some extent at Mbale, one-and-a-quarter acres under food crops rotation, half acre under timber, the remaining quarter of an acre being the house plot. The buildings comprised a two-roomed house, kitchen, store, latrine, wash-house, covered cattle shed, calf and implement shed, rat proof granary, wood store and chicken house.

A Ransome plough and cultivator, a hand-drawn cultivator and other farm implements were on view.

Manuring, which is practically unknown in native agriculture was featured strongly. The covered cattle shed was the first building erected, cattle were installed in it, and a suitable quantity of manure was ready for the exhibition, and daily demonstrations of carting the manure from the shed to the land on ox-drawn sledges created some interest. About 15,000 natives visited the Exhibition and the Holding.

The other show was an Agricultural Show held in Masaka in December. Funds for the Show were provided by the Buganda Native Government. Competitive classes were arranged for livestock, crops, hides and skins, handicrafts and school garden exhibits and in addition prizes were given for the best maintained native holdings in the district. Departmental demonstrations were given in beeswax preparation, coffee hulling and winnowing and the Chemist arranged a visible demonstration of the effects of anti-erosion measures on cotton and coffee plots, and the effects of anti-erosion measures in cotton and coffee cultivation. In addition duplicate plots of coffee had been established the one mulched with cut grass and with an elephant grass belt across the slope; and the other planted with no anti-erosion measures. A small concrete coffee drying barbecue and store capable of being copied by every coffee grower had been laid down in the show grounds.

It would appear from the attendance and exhibits that the show was a complete success.

Agricultural Education.

25. The report of the Superintendent of Agricultural Education is re-produced in full.

As mentioned in my report for 1933, any sound native agricultural policy in a country such as Uganda must be based on the family unit and the sound development of small holdings, and to this attempt, by means of courses at Serere and Bukalasa to train intelligent peasants, I attach the greatest importance.

It is fully realised that the instruction now being given and the economy of the holdings as at present practised is largely experimental, and that it is not desirable that a stereotyped lay out and system of cropping should be laid down. As experience is gained, modifications will be necessary, but the basic principles of conservation of fertility by the rational use of livestock, restoration of fertility by periodic withdrawal of land from cultivation and resting under grass or other suitable cover and the prevention of erosion are essential constituents of any system of sound agricultural practice and these principles are the foundation of the holdings.

In addition, it is realised that it is neither practicable nor desirable that the whole of the peasant agriculturists of the country should be trained at these small holding courses, but that the spread of this development must depend upon demonstration in the villages.

But it is a truism that bad demonstration is worse than no demonstration, and it is therefore the present policy to proceed slowly in this demonstration, for as the Baganda say "Akwata mpola atuka wala" (who goes slowly (carefully) goes far).

The native agriculturist, like other agriculturists the world over, is very conservative and suspicious of changes, and in a fundamental change such as this, very careful and sound demonstration is essential.

It is therefore our present policy to train selected intelligent natives who, after the completion of the course, can be established at strategical points, and, if there is any value in the methods which they practise, will act as *foci* for the spread of this system of mixed farming amongst the surrounding peasantry.

In the elephant grass belt it is already becoming apparent that the areas planted up with elephant grass provide ample fodder and bedding for the cattle on the holding and that outside grazing is unnecessary. The interesting experiment on housing of cattle in areas where *Stomoxys* flies are really troublesome is meeting with success.

Boards.

26. During the year two meetings of the Advisory Committee for the Development of Native Agricultural Production were held. Two major items included for discussion were :—

(*a*) Ploughing as a factor in Native Agriculture in Uganda.
(*b*) Preservation of Soil Fertility.

In regard to the former item the Department submitted a comprehensive memorandum putting forward facts and figures without any attempt at relating cause and effect. The Committee resolved that :—

> "While the Committee appreciates the fact that increases in production of cotton have not in Uganda always followed the use of the plough it considers that ploughs on the whole have been beneficial and their use should be encouraged by all reasonable means."

In regard to item (*b*) a very full statement of all aspects of this problem was prepared departmentally in which such important matters as anti-erosion measures, *e.g.*, terracing, controlled grass fires, contour planting, mulching of perennial crops, and green manuring, farmyard manuring, compost making, rotations, resting under grass, and the use of cotton seed as manure were discussed.

A full discussion took place on the many points raised, and arising out of the discussion as to the use of cotton seed as a manure, it was decided to appoint a Sub-Committee to explore the possibilities of the use of cotton seed locally with special reference to its use as manure. The Sub-Committee had not submitted their report at the end of the year, but had organised tests on the extraction and use of cotton seed oil.

The Committee agreed that this question was intimately bound up with education, and adopted the following resolution :—

"1. The Committee adopts generally the views put forward in the Honourable the Director of Agriculture's memorandum and recommends particularly that the flow of agricultural students coming forward for the Makerere class should be stimulated by scholarships. Wherever possible it ventures to hope that scholarships will be provided by the Native Administrations concerned and recommends in addition that ten additional scholarships should be provided by the Protectorate Government to provide for students from agricultural areas in which funds are limited.

2. The Committee also considers it to be most desirable to increase in every possible way the bias towards agriculture through appropriate teaching work in the schools throughout the Protectorate.

3. The Committee also recommends that when the small holder students leave their school they be assisted where necessary by a loan from their Native Administration not to exceed Shs. 150 to enable them to commence the establishment of their own holding."

27. Two meetings of the Coffee Board were held during the year.

The major item discussed was the operation of the Coffee Grading Ordinance. The Board decided to recommend that the procedure under which Managers of licensed Curing Works issued export certificates should be modified and that a system of official inspection and sealing of bags should be introduced.

This matter was under consideration by Government at the end of the year.

Legislation.

28. Beyond minor amendments to the Cotton Ordinance, and the Cotton Zone Ordinance no legislative changes affecting agriculture were made during the year.

Publications.

29. During the year the East African Agricultural Journal was established with an editorial board comprising the Director of East African Agricultural Research Station as Chairman and the Directors of Agriculture, Kenya, Uganda, Tanganyika Territory and Zanzibar as members. The first number was published in July, and bi-monthly issues have appeared since.

Following on the establishment of this Journal it is considered that the need for separate departmental publications will largely disappear. Several articles by Members of this Department have appeared in the Journal, and a supply of further material has been organised.

Acknowledgments.

30. The very valuable assistance given by the British Cotton Growing Association, Empire Cotton Growing Corporation, Royal Botanic Gardens, Kew, the Imperial Institute, the Imperial Agricultural Bureaux and the Technological Laboratory of the Indian Central Cotton Committee is gratefully acknowledged. I should also like to take this opportunity of recording my appreciation of the co-operation and helpful advice tendered by the Members of the various Boards and Committees over which I have had the pleasure of presiding.

31. As usual, although in no sense as a matter of formality, it is a pleasure to record the whole-hearted co-operation and assistance given by the Provincial Administration, and the Education and Veterinary Departments.

32. Finally I would record my appreciation of the loyal services rendered by all Members of the Department during the year. The past few years have witnessed a considerable extension in the establishment of the Department, and the keenness and efficiency of the younger recruits to the Department is convincing evidence of the value of the selection and training of these men under the Scholarship schemes of the Colonial Office and the Empire Cotton Growing Corporation from whose scholars recruits to the Colonial Agricultural Service are now almost exclusively recruited.

J. D. TOTHILL,

Director of Agriculture.

ANNUAL REPORT ON AGRICULTURAL EDUCATION IN UGANDA DURING 1935.

STAFF.

I was on duty throughout the year.

Mr. C. W. L. Fishlock, Agricultural Officer, was in charge of courses at Bukalasa until he went on leave in July.

Mr. R. W. Stuckey, Agricultural Officer, was in charge of the 3rd Year Makerere Agricultural Class and of the Kampala Plantation until he went on leave in July.

Mr. M. G. de Courcy Ireland, Agricultural Officer, was in charge of courses at Serere throughout the year.

Mr. R. K. Kerkham, Agricultural Officer, was in charge of courses at Bukalasa from the middle of July until the end of the year.

Mr. E. Williams, Agricultural Officer, arrived in the country on first appointment on December 17th and was posted to the Educational Section for lecturing duties to Makerere classes in Kampala.

Omw. S. B. Sevume and Omw. B. K. Kaumi, African Agricultural Assistants, were stationed at Bukalasa as assistants to the Agricultural Officer throughout the year. Omw. Jabuloni Odyek and Omw. Danieri Oryokot assisted the Agricultural Officer, Serere with the teaching and with the running of the small holdings. Omw. Y. K. Musitwa was stationed in Busoga throughout the year in charge of school garden inspection.

This report is divided into two sections dealing respectively with:—

I. Vocational Training in Agriculture.
II. School garden and nature study teaching in schools.

I. VOCATIONAL TRAINING IN AGRICULTURE.

(1) Courses for Chiefs.

These were continued as in previous years. Particulars of the courses are given in my report for 1934.

The following courses were held during 1935:—

At Bukalasa a ten weeks' course started on October 1st and finished on December 11th. It was attended by fourteen miruka chiefs and one mutongole chief from Buganda, two gombolola and four miruka chiefs from Busoga, and one gombolola and two miruka chiefs from Bunyoro. The chiefs who attended this course showed considerable intelligence, were obviously interested in the work and made good use of their time at Bukalasa.

At Serere it was decided, at the suggestion of the Agricultural Officer, Teso, and after consultation with the Senior Agricultural Officer, Eastern Province, to hold a number of very short courses of two weeks' duration each for chiefs from Teso district. The object was to give every gombolola and miruka chief in this district a short course of practical instruction in the rudiments of cultivation, (including good ploughing) and in soil conservation and the prevention of erosion. The first of the courses started on October 7th and they were still in progress at the end of the year. One hundred and sixty-eight chiefs had attended the course by the end of the year. The chiefs all appeared to be keen and interested in what they saw and were taught.

(2) Smallholders' Courses.

Serere.—The first batch of pupils having passed out at the end of 1934, a second two-years' course was started at the beginning of 1935. This second course was attended by twenty-one pupils, consisting of eight Teso, five Lango, one Acholi, four from Budama district (two Banyuli and two Basamya) and three Basoga. Two of the pupils were dismissed during July and their places were subsequently taken by two Perryman Memorial Scholars, (one from Bugishu and

one from Bugwere district). Nine of these pupils were placed on the three original twelve-acre holdings, (three on each). Of these, eight were accompanied by their wives. Of the remaining twelve, a man and his wife were placed on each of the two newer eight-acre holdings and ten bachelors occupied the twenty-acre holding. When necessary, the bachelors on this large holding helped the occupiers of the two eight-acre holdings.

Particulars of the cropping and general management of the holdings have been given in previous reports, and these have not been altered materially during 1935. The training is of a practical nature and is designed to enable the pupils when they leave to run holdings of their own in their home villages intelligently and profitably. Care is taken to teach only methods that can be followed by the pupils in after life with the means that would normally be at their disposal.

With the two exceptions mentioned above, the pupils worked well throughout the year and made satisfactory progress.

During the previous year approximately eight tons of farmyard manure had been made on each of the original twelve-acre holdings (*i.e.*, one ton per animal). This manure was applied in February, 1935 to a part of the "Wimbi" (millet) crop of each of these holdings, at the rate of eight tons per acre. These manured plots gave a substantial increase in yield as compared with the unmanured plots, both in the "Wimbi" crop and in the cotton crop that followed.

The accounts of the three original twelve-acre holdings for the year ending 31st March, 1935 show an average profit of Shs. 165 per holding.

Establishment of Smallholders.

The seven Teso pupils who completed their two years' course at Serere at the end of 1934 have made a start during 1935 with their own holdings in their home gombololas. Each was granted a loan not exceeding Shs. 200 from the native administration towards the expenses of starting a holding. They are under the supervision of the Agricultural Officer, Teso, who reports that they have all made a good start but that one or two of them are inclined to be lazy and lacking in initiative. Two of them had produced an excellent cotton crop by the end of the year which should give them a good start.

The Acholi pupil who completed the course has started a holding at his home near Gulu. He is under the supervision of the Agricultural Officer, Masindi.

Bukalasa.—Fourteen pupils completed their two years' course during the year, eight in May and six in October. Of these, seven are Baganda and seven Basoga. Of the Baganda, two have started holdings of their own, one in Bulemezi and the other in Masaka district. These two have received a loan of Shs. 100 each from the Buganda Native Administration. These loans, of which four have been earmarked for pupils who have passed through the Bukalasa Smallholders' course, in addition to one for pupils from the C.M.S., farm school at Namutamba and one for pupils from Roman Catholic Schools, are re-payable over a period of five years, two per cent. interest per annum being charged. The expenditure of this money is controlled by the local Agricultural Officer, who also helps holders in the laying out and management of their holdings. A third pupil, who left in October, had acquired land for a holding by the end of the year and will open it up at the beginning of 1936. The remaining four Baganda, not having funds as yet to start holdings of their own, have been engaged in the Department in various capacities.

Of the seven Basoga who completed the course, one has started a holding of his own in Bukoli saza, three who left in October were, at the end of the year, still looking for land and the remaining three had obtained other employment.

It is of interest to note that the only pupils who have made a good start on their own are those who have obtained a loan of capital. The Basoga pupils, besides receiving no loan have also had considerable difficulty in obtaining land. The difficulty is not so much that no land is available, but that it is very difficult to get ten or twelve acres of good land in one place.

As was mentioned in my report for 1934, the use of the larger (twenty-one acre) holding at Bukalasa as a teaching institution was discontinued in May, when the first batch of pupils had completed their course. Meanwhile, the course was continued on the smaller (thirteen acre) holding, and, with the departure of the second batch of pupils in October, there were vacancies for seven pupils for the second two-year course. It had been intended to admit only pupils

from Bulemezi saza, but owing to the lack of suitable candidates it was decided to admit boys from other parts of Buganda where subsequent supervision of their holdings by an agricultural officer would be possible. At the end of the year four new pupils had joined the course and arrangements had been made to fill the remaining vacancies at the beginning of 1936.

The profit from crops and poultry on the thirteen-acre holding for the year ending the 31st March, 1935 was Shs. 123. This was arrived at after debiting the pupils' time at the current rates of pay, but not including the depreciation of buildings, which would normally be carried out by the smallholder himself. Profit from the three acres of coffee has not been included, as this still forms a part of an experimental area and is not yet available as an integral part of the holding. During the year some of the mud-and-wattle buildings on this holding were replaced by others of a better type, with cement floors and walls of sun-dried brick.

The accounts for the twenty-one acre "mixed" holding for the year ending 31st March, 1935 showed a profit, after allowing for depreciation, of Shs. 529. This included a considerable appreciation in the value of live-stock.

Owing to trouble with *Stomoxys* biting flies this twenty-one acre holding was worked with paid labour from May onwards. New cattle sheds were built and the cattle moved into them in October. These buildings have mud-and-wattle walls, a cement floor and fly traps in the thatched roofs. They are built so that, when the doors are closed, light can only enter through the fly traps, to which the flies are attracted and where they can be destroyed. The cattle have improved in condition since they have been housed in the new buildings, in spite of the fact that they have been worked regularly, and they have not been worried by *Stomoxys* flies. It will not be possible, however, to assume that the new buildings are completely successful until after they have been used throughout a prolonged period of wet weather, when the flies are usually at their worst.

Under the new system the cattle are out grazing or working from 6 a.m. to 1 p.m., and inside the buildings during the remainder of the 24 hours. When inside they are fed with cut elephant grass, sorghum millet, sugar cane, plantain and other peelings and crushed maize. As regards the grazing, it has been possible to graze the cattle entirely on the holding during the period October to December.

(3) The Training of Agricultural Assistants.

Twelve students completed the third year of the Makerere Agricultural Course in December. The details of the syllabus for this course will be found in the Report on Agricultural Education for 1933. They all satisfied the examiners and will be allowed to proceed to the fourth (practical) year of the course at Serere and Bukalasa in 1936.

Ten students completed the fourth year of the course at Serere and Bukalasa. Of these nine qualified and will proceed to the fifth year in January, 1936. The lengthening of the course to include a fourth and fifth year on the Government farms at Serere and Bukalasa has undoubtedly increased its value. These years correspond to the time that an English agricultural student has to spend on a recognised well-run farm and will give us a good idea of the aptitude of these boys in the field as possible future assistants to the Agricultural Officers of the Department.

Five students completed the fifth (and final) year of the course in December. They were all allowed a pass and have qualified for entry to the African Civil Service as African Agricultural Assistants in the Department.

(4) The Training of Agricultural Instructors.

The following courses for instructors working under the Department were given during the year:—

Bukalasa.—A two-months' course was held during July and August and was attended by twelve instructors from Ankole and Kigezi and from Masaka district. At the conclusion of the course the instructors from the Western Province went on to Bugishu for further instruction in coffee cultivation.

A further two-months' course was held during October and November and was attended by twelve instructors from the Western Province, Bunyoro and Busoga.

Serere.—A two-months' course was held during March and April and was attended by twenty-three instructors and plot observers from the Eastern Province.

All of the above courses were made as practical as possible and dealt with the rudiments of cultivation, the prevention of soil erosion, and plot measurement. At Bukalasa the planting, mulching and care of coffee was also included.

II. SCHOOL GARDENS AND NATURE STUDY TEACHING IN SCHOOLS.

Short courses of two or three months' duration were given to teachers from the Secondary, Middle and Elementary Schools, as follows:—

Bukalasa.—A course was held from the 28th January until the 13th April and was attended by seventeen schoolmasters from secondary and middle schools in Buganda, Bunyoro, Busoga and the Western Province.

A two-months' course was held at Bukalasa during July and August and was attended by twenty-one teachers from elementary schools in Buganda, Busoga and the Western Province.

Serere.—A course for elementary schoolmasters was held from June 4th to August 24th and was attended by nineteen teachers from schools in the Eastern and Northern Provinces.

The aim of these courses, as in previous years, has been to give the schoolmasters some idea of how nature study can be taught in the school, to show them how a school garden should be planned and used, and to teach them a few simple principles of correct cultivation and soil conservation. Nature study is still badly taught in many schools and these courses are still far too short to do more than touch the fringe of a large subject. They do something, however, to fill the gaps—often very large gaps—that are left in this subject in their Normal School training.

Inspection of Schools.

It has not been possible to give much time to school inspection during the year. Increase in the number of courses held at Bukalasa and Serere and the calls of district work gave the Agricultural Officers at those stations little opportunity for this work, and a temporary shortage of staff during the second half of the year, in addition to the lengthening of the Makerere course, made it necessary for me to lecture in Kampala throughout the year. However, it was possible to carry out some inspections as opportunity allowed, and it was found possible to retain an African Agricultural Assistant in Busoga throughout the year for this work. It is pleasing to note that in many schools progress has been made in the teaching of nature study and in the organisation of school gardens, but there are still far too many schools in which this is not so.

Smallholdings Schemes under Mission Authorities.

Namutamba Farm School (Church Missionary Society).

During the year the field work of this school was modified to include a self-contained smallholding of fourteen acres as an essential part of the equipment.

The initial period of three years during which the school would receive a grant from the Protectorate Government was due to terminate at the end of 1935. This period was extended during the year to cover a fourth year (1936) to enable pupils entering in 1935 to complete a two years' course.

Fourteen pupils were in the second year of their course during 1935 and six new pupils joined the course at the beginning of the year.

The Gulu Farm School (Verona Fathers' Mission).

At the beginning of the year a third holding was brought into use and was occupied by seven Banyoro pupils in the first year of their course.

The holdings are organised on the lines that have been found to be successful at Serere, and at the Farm Board meeting held in November the Board recorded its opinion that the standard of training was most satisfactory and considered that the farm was proving its value.

At the end of the year twelve pupils passed out, having finished their two years' course. Of these pupils, four are Banyoro, three Acholi, two Lango and three Madi. It was decided that each of these pupils should receive a loan from the Farm School grant to help to establish them on their holdings.

General.

Meetings of the Buganda Provincial Educational Council and of various District Education Boards were attended by members of the staff of this Division during the year.

Other Departments have rendered valuable assistance during the year and I wish to acknowledge the valuable help and co-operation of the Director of Education, the Director of Veterinary Services and the Conservator of Forests and of members of their Departments.

E. G. STAPLES,
Superintendent of Agricultural Education.

QUESTIONNAIRE.

Details Required from Agricultural Survey.

1. Description of area.
2. Total acreage of cultivable land in area surveyed.
3. (*a*) Total acreage under cultivation at any one time in area surveyed.
   (*b*) Total acreage of cultivable land resting at any one time.
   (*c*) Total area under forest or suitable for forest including non-agricultural land (*e.g.*, hill tops, rocky outcrops, semi-swamps, etc.).
4. Population.—
   (*a*) Total number of taxpayers.
   (*b*) Total number of families.
   (*c*) Total number of adult males.
   (*d*) Total number of adult females.
   (*e*) Total number of children.
   (*f*) Occupations of adults.
   (*g*) Average incomes of individuals of different occupations.
5. Livestock.—
   (*a*) Total of each kind in area.
   (*b*) Total of each kind per taxpayer average.
   (*c*) Total of each kind per family unit average.
   (*d*) Details of livestock management, feeding, housing, watering, etc.
6. Details of cultivation.—
   (*a*) Systems or rotations followed.
   (*b*) Total acreage under each crop.
   (*c*) Average acreage under each crop per taxpayer.
   (*d*) Average acreage under each crop per family unit.
   (*e*) Cultural methods followed, *e.g.*, hand or ox cultivation.
   (*f*) Whether hired labour used or not.
7. Social life.—
   (*a*) Constitution of Mutala and whether on communal or individualistic basis.
   (*b*) Diet of people—number and frequency of meals, use of salt and plant ash.
   (*c*) Division of labour as between men, women and children, *e.g.*, money crops, food crops, herding of livestock, water carrying, etc.
   (*d*) Domestic water supply.
   (*e*) Domestic fuel supply.
   (*f*) Local industries such as bark cloth, carpentry, pottery, ironwork.
   (*g*) Supply of building poles and withies used in building, number used and distance carried.
8. Game—
   (*a*) Number of game nets.
   (*b*) Is hunting of wild animals frequent and organised.
   (*c*) Prevalence of Guinea Fowl and Francolins and whether harmful or otherwise.
   (*d*) In grain areas is protection necessary against damage by waxbills and weaver finches.
   (*e*) Prevalence of rodents and damage to stored grain.
   (*f*) Abundance or otherwise of fish, use of dried fish.

NOTE.—As far as possible a tabulated statement of statistics should be included for items 2, 3, 4 (*a*) (*b*) (*c*) (*d*) and (*e*). 5 (*a*) (*b*) and (*c*), 6 (*b*) (*c*) and (*d*). Any remarks which the officer concerned considers worthy of mention and not covered by preceding sections should be included under a final paragraph headed Additional Information.

SURVEY CARRIED OUT IN NAMUNGALWE.

PART I.

By R. K. Kerkham, Agricultural Officer.

1. Introduction.

The primary object of this survey was to find out what crop rotation is followed by the natives in south of Busoga. It was also considered a good opportunity to obtain other information about native agricultural methods which cannot be obtained during the course of ordinary safaris. The survey was carried out from December 9th—19th, 1934. It is realised that full information cannot be obtained in the course of one short period, as most of the cereal and leguminous crops are grown in the first rains, and the cotton crop in the second.

2. Situation of Namungalwe.

The village chosen for the survey was the mutala of Namungalwe, which is the muluka of Mutuba II, there being one mutala only in this muluka, in the gombolola of Mutuba VIII in the saza of Kigulu.

The mutala is admittedly not entirely typical of Southern Busoga, there is not the dense tree growth found in the vicinity of Sikiro for instance; on the other hand the conditions are definitely of the southern long grass type, there is no sign of the scrub bush vegetation found in the north of the district, and plantains grow well.

The mutala had the added advantage from the point of view of a survey that the gombolola chief had just returned from an agricultural course at Bukalasa, was interested in the work and gave all the assistance in his power. There was consequently no difficulty in obtaining the desired information. The mutala is in a "model gombolola", but there is no reason to suppose that the agricultural customs of the peasants have been effected by the presence of a dispensary, concrete Lukiko buildings, football pitch, etc.

3. Method of the Survey.

A standard form of questionnaire was used. One sheet was filled up for each household. Measurements of the size of plots was first made by means of a chain, but this was found to be altogether too slow, and the plots were measured by the paces of two native instructors, both of whom had been tested previously.

4. Population.

The population of the mutala was 750 persons, being 219 men, 256 women, 275 children. Of the children 87 were said to be capable of half time work. The surplus of women over men is partly accounted for by the fact that any married girl was counted as a woman, whereas a number of boys of the same age would be counted as children. The number of poll tax payers in the chief's estimate for 1935, made in December, 1934, was 172.

These 750 people live in 168 households, each household consisting of the householder, his family and any other friends, brothers, father, mother or hired labourers who were living with him. In two cases old women were found living by themselves and they have been included as householders.

Race.—Of the householders 163 were Basoga, three Baganda and two Banyaruanda.

Occupations.—Of the 166 male householders, 30 had some occupation other than farming.

Chiefs.—		*Craftsmen.*—	
Gombolola	1	Road Maker	1
Muruka	1	Farmer and Carpenter	1
Mutala	1	Farmer and Smith	2
Kisoko headman	7	Farmer and Basket Maker ...	1
Kisokwe	1		
Total ...	11	Total ...	5

Other occupations.—	
Dispenser	1
School Teachers and Preachers ...	4
Lorry Drivers (during the cotton season only)	3
Farmers and herdsmen	6
TOTAL ...	14

There are two sub-grade schools in the mutala, one R.C., and one C.M.S., and one Mohammedan school, though religion only is taught at this. The herdsmen tend cattle for other men, get paid for this in milk, and then sell some of this and barter some for food; two of them are Banyaruanda, and these two men and one other grow no food crops at all. Two of the three lorry drivers are Baganda.

Thirty-four of the 166 householders, or 21 per cent., have been to some school, not counting the Mohammedan school.

5. Crops.

(*i*) *Cotton.*—The general condition of the cotton crop in the mutala was better than the average in Busoga. There were fewer unweeded plots spacing was better than the average and the amount of September sown cotton was small.

The total number of plots was 539, compared with 485 in the chiefs' returns, but the mean plot size was 0·590 acres, compared with a district mean of 0·759 acres, so the actual acreage was 318, compared with an estimate of 368. The acreage per taxpayer is 1·85, which is much lower than the district mean of 2·747; this can partly be accounted for by the fact that there is more than the normal proportion of chiefs, teachers, etc., who do no manual work themselves.

Previous Cropping.—The previous cropping of each plot was recorded. The results obtained were as follows:—

Previous Crop.	Percentage of Cotton Acreage.	Actual Acreage.	Acreage in Returns.
(*a*) *Cereals.*—			
Eleusine	22·5	71·5	123
Sorghum	0·7	2	0
Maize	4·9	16	8
TOTAL ...	28·1	89·5	
(*b*) *Legumes.*—			
Ground nuts	14·1	44	38
Voandzeia	3·1	10	
Vigna	4·2	13	28
Phaseolus Mungo	1·5	5	22
TOTAL ...	22·9		
(*c*) New Land	41·0		
(*d*) *Miscellaneous.*—			
Sweet Potatoes	3·9		
Cassava	1·1		
Sim-sim	1·3		
Plantains	0·6		
One year rest after cotton	1·0		
TOTAL ...	7·9		
GRAND TOTAL ...	99·9%.		

These figures indicate that about 40 per cent. of the cotton in this mutala was grown on new land, 30 per cent. follows cereals and 20 per cent leguminous crops.

The figures for acreages of cotton following cereals and legumes can be taken as very nearly the same as the actual acreages of these crops grown, as nearly all the plots are sown with cotton and the comparison with estimated acreages from the returns is a fair one. The estimates of the acreages of these crops agree with the actual figures as nearly as one could expect. Effect of the size of family on the area of cotton grown.

The following average figures for the amount of cotton grown (in thousands of square yards) have been extracted.

No. in sample.	Family.		Area.
13	1 man and 0 woman		6·8
64	1 man and 1 woman	(*a*) 0 child, 7·6	8·25
		(*b*) 1 child, 8·8	
		(*c*) 2 children, 11·5	
25	1 man and 2 women and children		10·3
8	1 man and 3 women and children		11·0
6	1 man and more than 3 women (average 4½) and children		12·6

It appears that when a man gets married he stops doing much work himself and he and his wife only grow about 25 per cent. more cotton than he did himself as a single man.

Only children capable of half time work are included here. It would appear that a child of this size looks after about as much cotton as an extra wife would.

(*ii*) *Plantain Gardens* (*Lusuku*).—Of the 168 householders all but eight had a lusuku; these eight were explained as follows:—

4 were herdsmen who barter milk and ghee for matoke (cooked plantain).

1 was a woman living by herself who gets matoke from her son.

1 man got matoke from a neighbour.

2 single men get matoke from their fathers' lusuku.

There are 189 plantain gardens in the mutala, with a total area of 288 acres and an average size of 1·520 acres, compared with a district mean of 1·744. The area per taxpayer is 1·68 acres, comparing with a district mean of 1·95.

An attempt was made to find out the ages of the various gardens, but the figures, especially anything over 10 years, are necessarily very inaccurate.

Age.	Percentage.	Age.	Percentage.
1st year	5·9	11—20 years	24·2
2—5 years	6·5	21—50 years	20·0
6—10 years	8·6	Over 50 years	34·7
		TOTAL	99·9%

It appears that not more than five per cent. of the total plantain acreage is replanted each year.

(*iii*) *Sweet Potatoes*.—There were 371 sweet potato plots, compared with 378 in the returns, with a total area of 44 acres, and a mean plot size of 0·120 acres, compared with an estimate of 0·192. The acreage per taxpayer is 0·25 acre compared with an estimate of 0·36 acre.

The cropping previous to sweet potatoes was as follows:—

Crop.	Percentage.	Crop.	Percentage.
New Land	76·2	Legumes and Sim-sim	1·8
Sweet Potatoes	6·1	Cereals	7·8
Cotton	8·1		
		TOTAL	100·0

It was noted that the bulk of this crop is grown in five or six large patches, in each of which there are 20—30 small plots. These are in places where it is considered that cotton would not grow well, such as near the swamp, and this crop does not enter into a rotation any more than the plantains do.

The effect of the family on the sweet potato acreage was also worked out and the following average figures obtained:—

Areas in hundreds of square yards.

No. in sample.	Family.		Area.
28	1 man and 0 woman		1·32
64	1 man and 1 woman	0 child, 8·12	9·04
		1 child, 11·74	
		2 children, 11·18	
28	1 man and 2 women and children		14·1
8	1 man and 3 women and children		31·9
6	1 man and more than 3 women (average 4½)		46·1

These figures show a very different state of affairs from that existing in the case of cotton. A single man grows cotton, but generally manages to borrow sweet potatoes from somebody else, and when a man gets an extra wife she always grows an extra plot or two of sweet potatoes, though she may not of cotton.

(*iv*) *Cassava.*—There were 62 plots of cassava in the mutala, with a total area of 3·9 acres and a mean plot size of 0·063 acres. This is much less than the district mean of 0·165, but the bulk of the cassava in the district is grown in the north.

All the plots were recently planted, as all supplies were used up in January and February, 1934.

This crop is also grown in large patches, usually near the sweet potatoes, and, like that crop, does not enter into any rotation.

(*v*) *Other Crops.*—The following areas of other crops were found:—

Crop.	No. of Plots.	Area.	Mean plot size
Sorghum	17	2·1 acres	0·122
Maize	11	0·4 ,,	0·03
Tobacco	6	0·07 ,,	—
Vigna catjang	5	0·27 ,,	—
Sim-sim	3	0·27 ,,	—
Voandzeia	1	0·12 ,,	—
Phaseolus Mungo	2	0·10 ,,	—
Groundnuts	1	0·13 ,,	—

It is clear that no appreciable quantities of legume or cereal crops are grown during the second rains in this part of Busoga.

A record of other agricultural crops grown in the plantain gardens was made. The percentages of householders growing them were as follows:—

Crop.	Percentage.	Crop.	Percentage.
Paw-paw	80	Marrows	74
Citrus	59	Tannias	52
Mango	39	Yams	21
Pineapple	44	Sugar cane	11
Guava	8	Tobacco	6
Chillies	80		

A surprising figure here is the percentage of citrus.

(*vi*) *Crop Summary.*—The acreages of the various crops grown are as follows:—

Crops not in a Rotation.				Acreage per household.
Plantains	288	1¾	—	1¾
Sweet Potatoes	44	¼	—	¼
Cassava	4	1/40	—	1/40
TOTAL	336	—	336	—
Sown in early Rains.				
Eleusine	71			
Sorghum	2	½	—	½
Maize	16			
Groundnuts	44	¼	—	¼
Voandzeia	10			
Vigna catjang	13	½	—	½
Phaseolus mungo	5			
Sim-sim	4			
TOTAL	165	—	165	—
Sown in Late Rains.				
Cotton	318	—	318	1·85
GRAND TOTAL			819 acres.	

6. Stock.

The following numbers of stock were kept in the mutala.

	Number.	No. of families recorded.	No. per family.
Cattle	300	167	1·80
Goats	468	167	2·68
Sheep	71	167	0·42
Fowls	1,101	164	6·71

As mentioned before the cattle are tended by herdsmen, who live in a part of the mutala where the soil is thin and unsuitable for crops; they do not therefore in any way affect agricultural practices. The goats and sheep are kept near the houses and are herded by small boys.

There are no ploughs in the mutala.

7. Conclusion.

The following are the main points concerning crop rotations, in the part of Busoga considered, brought out by this survey:—

(*i*) Sweet potatoes and cassava are grown in an assembly of plots and do not enter into the crop rotation.

(*ii*) Of the cotton area approximately 40 per cent. is on new land, 30 per cent. follows cereals and 20 per cent. leguminous crops.

(*iii*) The areas of cereals and leguminous crops grown during the second rains is very small.

PART II.

By R. K. Kerkham, Agricultural Officer.

A survey of crops in the Namungalwe muruka has been carried out in June, 1935 to complete the survey carried out in December, 1934.

The following data were obtained:

1. Size of each plot containing growing food crops with the exception of plantain gardens, and previous crop on each plot.

2. The number of men and women per household was checked.

2. Crop Acreages.

For details *see* Table 1.

Plantains.—Number of plantain gardens is returned per gombolola and not per muruka.

Sweet Potatoes.—There are two plantings of sweet potatoes in this part of the district, in the early rains and again in August and September. The figure given in the December survey for number of plots N.A. 2 forms, *i.e.*, 378 is the number returned for the whole year 1934. One would not expect either of the figures for actual acreage to agree with the estimated acreage for the whole year.

Cassava.—As noted in my report on the December survey the bulk of the cassava in the district is grown in the north, on the other hand the estimated total area of cassava in the district in 1934 was 17·788, compared with 30·861 acres of sweet potatoes. This is undoubtedly an over-estimate, and it is unlikely that there were more than 5,000 acres.

Sorghum.—No return of sorghum plots has been made by the chief. His only excuse was that he was away during the planting time and the mutala chief was acting as muruka chief.

TABLE 1.

Crop.	Survey.	Number of plots.		Mean plot size.		Total acreage.		Acreage per Taxpayer.	
		Actual.	N. A. 2 Forms.	Actual.	District Mean 1934.	Actual.	Estimated.	Actual.	District 1934 Estimated.
Cotton	Dec., 1934 ..	539	485	0·590	0·759	318	368	1·85	2·747
Plantains ..	Dec., 1934 ..	189	..	1·520	1·744	288	..	1·68	1·95
Sweet Potatoes ..	Dec., 1934 ..	371	378	0·120	0·192	44	73	0·25	0·36
Sweet Potatoes ..	June, 1935 ..	164	210	0·121	0·192	19·58	40	0·114	..
Cassava	Dec., 1934 ..	62	106	0·063	0·450	3·9	..	0·023	0·209
Cassava	June, 1935 ..	57	83	0·084	0·450	4·79	..	0·028	..
Bulo	June, 1935 ..	165	148	0·621	0·613	102·40	91	0·595	0·80
Muwemba ..	June, 1935 ..	12	..	0·095	0·208	1·14	..	0·007	0·016
Maize	June. 1935 ..	139	231	0·263	0·284	36·55	65	0·212	0·22
Groundnuts ..	June, 1935 ..	253	153	0·187	0·175	40·86	28	0·239	0·16
Sim-Sim	June, 1935 ..	26	27	0·080	0·196	4·15	5·3	0·024	0·046
Empokya ..	June, 1935 ..	124	89	0·228					
Mpindi	June, 1935 ..	43	81	0·103	0·20	55·90	36	0·324	0·202
Mpande	June, 1935 ..	142	..	0·164					

Maize.—A comparison between 1934 estimates and 1935 actual plantings is not of much value for this crop, as this year maize is being grown in this gombolola, and many others round Iganga, as a cash crop, whereas last year it was mainly a food crop. With the increase in price the Indians at Iganga have promised to buy the crop, and they distributed seed free to many growers. In fact maize is the only cash crop here besides cotton; groundnuts and sim-sim being grown for food only. The actual acreage of maize grown is considerably higher than the figures shown, as nearly all plots of mpokya, mpindi and mpande and some of the groundnut and bulo plots contain some maize.

Groundnuts.—Namungalwe is in the middle of the best groundnut land in the district. In the north weather has been too dry for the crop this year, and further south, particularly in Bunya, pigs make the crop almost impossible to grow.

Bean Crops.—Plot measurements have not been carried out on these crops in the past, but are being made this year. The figure 0·2 is a guess. Some confusion exists regarding the Luganda and Lusoga names for these crops. Phaseolus Mungo, Green gram (mpokya in Luganda) is called Mpindi Mulali in Lusoga. The Luganda name is also used. Vigna catjang, Cow Pea (Mpindi in Luganda) is also called Mpindi in Lusoga. Two kinds of Mpindi are distinguished:—white, Mpindi Njaiyrwa, referring to the leaves, which are used as a vegetable, and the red sort, Mpindi Mandawakere. This refers to the shape of the seed, one side of which is flat, like a frog's stomach. The leaves of the latter, however, are also used as a vegetable and in North Busoga the distinctive names between the two kinds of Mpindi are not known.

Mpande (*Voandzeia subterranea*) has been omitted on some reprints of N.A. 2 forms. The chief in this muruka has omitted the crop altogether, other chiefs write it in the place for wheat, and the estimates of the crop are consequently of no value. I have asked to have the new set of forms, which are now being printed, sent to the Agricultural Officer before distribution in Busoga, so that the necessary alteration may be made.

There were two plots of beans in the muruka.

Cotton.—One plot only of cotton had been planted. Clearing of new land had started, most men having cleared one small plot.

Uncleared Land.—It was found impossible to obtain an estimate of any value of the amount of uncleared land in the limited time available.

Rotations.—The following is a summary of the figures obtained:—

Crop.	Acreage.	Total.	Percentage following.				
			Cotton.	New land.	Sweet Potatoes.	Lusuku.	Muhogo.
Sweet Potatoes	19·58	100	42	29	29	..	..
Bulo	102·40	100	99	0·4	0·6	..	..
Muwemba	1·14	100	38	36	15	11	..
Maize	36·55	100	86	4	5	5	..
Simsim	4·15	100	90	2	8	..	..
Groundnuts	40·86	100	94	5	0·5	0·5	..
Mpokya	28·26	100	95	2	1	2	..
Mpindi	4·42	100	89	..	11	..	..
Mpande	23·22	100	93	7	..	..	..
Muhogo	4·79	100	43	44	8	4	1
	265·37	..	..	..	..	..	..

These figures are what one would expect for this district, nearly all the spring sown crops, other than sweet potatoes and muhogo follow cotton. Mwemba appears to be an exception, but the area of this crop was too small to attach any significance to the figures obtained.

In the December survey 75 per cent. of the sweet potato acreage was on new land and the other 25 per cent. after cotton, sweet potatoes and bulo.

The two parts of the survey have brought out the following points with regard to the growing of sweet potatoes and cassava in this muruka.

1. There are two main planting times. Rather more than 50 per cent. is planted towards the close of the first rains, April and May this year, and the remainder in August and September.

2. Both crops are grown in large patches usually one or two patches per Kisoko, each containing between 10 and 30 plots.

3. Every household grows a plot of sweet potatoes in the second rains, but in the early rains there are likely to be other crops available at the same time as they are, and though the total area is higher than later in the year, many households, particularly those with large lusukus, do not grow sweet potatoes.

4. The land chosen for the sweet potato and cassava patch is unsuitable for cotton, either because the land has been worked out or because it is in a place unsuitable for cotton, *e.g.*, near the swamps.

5. About 25 per cent. of the patches are cropped with sweet potatoes twice, otherwise the land is allowed to revert to grass and bush when cropping is finished.

INFLUENCE OF THE SIZE OF FAMILY ON AREA OF CROPS GROWN.

Crop.	Area. (in 100's of square yards). Household.				
	1 M.	1 M. 1 W.	1 M. 2 W.	1 M. 3 W.	1 M. 4 or 5 W
JUNE, 1935, SURVEY.—					
Sweet Potatoes	3·20	4·69	5·20	12·80	16·50
Bulo	7·90	24·33	35·00	34·60	24·14
Maize	4·55	10·49	16·92	13·30	10·00
Groundnuts	3·25	12·20	14·12	19·90	29·25
Mpokya	4·95	6·97	9·64	14·50	25·25
Mpande	2·15	4·75	8·52	13·70	28·75
Total	26·00	63·43	89·40	108·80	133·89
Acres	0·5	1·3	1·8	2·2	2·7
Number in sample	20	65	25	10	4
DECEMBER, 1934, SURVEY.—					
Sweet Potatoes	1·32	9·04	14·1	31·9	46·1
Cotton	68	82·5	103·0	110·0	126
Plantains	59·4	55·8	82·6	124·7	297

M. = Man. W. = Women. Children have not been taken into account.

Crop.	Comparative area taking 1 M. 1 W. = 100. Household.				
	1 M.	1 M. 1 W.	1 M. 2 W.	1 M. 3 W.	1 M. 4 or 5 W.
JUNE, 1935, SURVEY.—					
Sweet Potatoes	68	100	111	273	352
Bulo	32·5	100	145	142	99
Maize	43	100	161	126	95
Groundnuts	27	100	116	163	240
Mpokya	71	100	138	208	362
Mpande	45	100	179	293	605
DECEMBER, 1934, SURVEY.—					
Sweet Potatoes	14	100	157	353	510
Cotton	82	100	114	133	154
Plantains	107	100	148	224	532

Owing to the relatively small numbers of households measured these average figures vary in inexplicable ways, but they bring out clearly a difference between the food crops and other crops.

For the crops that are not grown mainly for food, that is cotton, bulo and maize, it is not essential as is the case with food crops, for a man to increase the acreage grown when his family is increased, and these figures bring this fact out.

Bulo is not a food crop in this area. It is used for beer and for Government food reserves, and only used as food in times of scarcity. It is not customary for women to drink as much beer as the men.

As explained above, maize is mainly grown for sale in this muruka.

5. Miscellaneous.

When data to be obtained on this survey was under discussion last year, I was asked by the District Commissioner to try and find out what work the various grades of chiefs do in the miruka. So far as this miruka is concerned it is undoubtedly true that the brunt of the work is done by the Kisoko headmen. They decide who has the right to cultivate any specified piece of land and mark out the plots in many cases. They also count the plots in their Kisokos and report to the muruka chief, who writes down the total. Neither the muruka chief nor the mutala chief can be relied upon to know to whom, any given plot belongs nor to know the people in any particular house *i.e.*, how many there are, what they do, whether household has been to school, etc. There will either have to be a very large increase in number of miruka chiefs, or a correspondingly large increase in the amount of work done by him, if the office of Kisoko headman is ever abolished.

PART III.

By T. R. Hayes, Agricultural Officer.

A further examination of this mutala was undertaken to obtain certain information required by the Director of Agriculture.

2. His letter opens up rather broader matters regarding small holdings than can be dealt with by simple answers to his questions.

3. In order to make the matter clear it is first necessary to describe briefly the topography of the land and the agricultural customs of the people.

4. *Topography.*—The mutala consists of a hill in the form of a truncated wedge, sloping down to the swamps in the north and south directions; to the east and west the land joins up with the higher land of other mitala. The highest zone consists mainly of a deep soil varying in colour from red to brown, mainly the latter, and in this area all crops, including plantains, can be grown.

5. This soil extends for over a thousand yards on each of the two sides from the centre of the ridge. This soil is of very fair average fertility, Sudan Red Top, (a sign in this locality of impoverished soil) is rare. There is no sign of erosion in the centre, but definite signs of erosion on the slopes, though the matter has not yet become at all serious.

6. The second zone is situated below the limit of profitable plantain growing and consists of two strips either side of the wedge, varying in width from practically nothing to 1,000 yards. Plantains do not grow well here, owing to the nearness of stone to the surface.

7. The depth of soil varies from about four feet to nil. The soil varies from light brown to black, mainly according to its position on the slope and there are also some sandy areas. This land is suitable for all crops, except plantains, and the soil is fertile, but not as much as in the first zone. As the soil becomes thinner, crops would suffer to a certain extent from the early cessation of rains, or an exceptionally dry spell during the rainy season, owing to the quick drying of the subsoil.

8. This, however, is not regarded as a deterrent to cultivation. Such land is usually put under early cotton, which has a reasonable chance of maturing by the end of the rains. The land thins down until small outcrops of rock occur, but cotton has been found growing quite close to the rock.

9. The shallower parts of this zone cannot be heavily cropped. Sometimes one crop may be taken off and the land then left for a number of years. These areas are not clearly defined, merging gradually into the better soils and the question of cultivation is a matter of the opinion of the peasant, and sometimes of his intelligence, or lack of it.

10. For instance, in one case a man planted his early cotton on deep soil and late cotton on a soil of only 18 inches depth. Therefore, apart from the difficulty of accurate measuring of such areas, (thick elephant grass was noted growing luxuriously on only 18 inches of soil) it was felt that, although some of the land was of definitely poor cropping value, no good purpose would be served by attempting to measure it. An attempt could, however, be made during the dry season when the grass has been burnt.

11. The third zone consists of a narrow strip of about 150 yards wide on each side of the wedge and is only suitable for sweet potatoes.

12. The fourth zone consists of two strips of dry swamp, each of an average width of 300 yards. The amount of water in the mutala is negligible in area. These two last zones consist of heavy black soil.

13. The area of the mutala was found by a system of triangulation. Paces were used to measure distances, as the use of a chain meant delay, also a gang of labourers to cut a path through the bush and compensation for crops. Even if a chain had been used, the various points were invisible to each other and the only way to get an accurate estimate would be to enlist the help of the Survey Department.

14. An error of only 10 per cent. (which seems quite reasonable under the circumstances) means a difference of 150 acres, which, as will be seen later, makes all the differences between under and over population. The areas were as follows:—

TABLE I.

Zone	Type	Acres	
I.	Suitable for crops including Bitoke	817	
	Less roads, houses, Gombolola grounds, Churches, football grounds, etc.	68	749
II.	Thinner soil suitable for annuals, but not Bitoke		246
III.	Suitable for sweet potatoes or grazing only	124	
	For grazing only	282	406
	Total Agricultural Land in Mutala		1,401
	Add roads, houses, etc.		68
	Total area of Mutala		1,469

15. *Habits of the People.*—The people are all Matoke eaters and as the plantains are preferred near the house, practically all houses are situated in Zone I. Most people have one plot for annuals, near their houses, and one in Zone II, although a few have no plot in Zone I.

16. Although they plant most of their sweet potatoes in Zone III, they dislike doing so, not only on account of distance, but because there is the danger in very wet years of the crops being spoilt by flooding. A third point is that on returning from their work they have to carry the sweet potatoes for their meals, whereas, if this were not the case, they would be free to carry a full load of firewood.

17. Although strictly speaking all land in this area is Crown Land, each holding, inclusive of items in all three Zones I, II and III, is acknowledged by native custom to be the property of the holder, who has usually inherited from his father or other relatives. If a holder abandons his land, it can then be given to any one who asks for it, but if the holder previously signified his intention of returning, say after a period of work as a porter his land will be kept for him, provided that he pays his Poll Tax in the Gombolola, regularly. An abandoned holding is given *en bloc* to an immigrant. It is not split up among neighbouring holders. This is not surprising when it is remembered that the Kisoko headman's sole income from the Native Administration is 40 per cent. of the Busulu (an average per headman in this mutala of Shs. 97 per annum) and that larger holdings mean less Busulu payers and therefore less income to the headman.

18. Land in Zone II is not fully occupied, and if a holder wishes to increase his acreage of cotton or bulo, he can usually manage to borrow some land, if necessary. No rent is paid for the use of borrowed land, but in case of food crops, not cash crops, the grower may make a courtesy gift of a part of his crop to the owner of the land. This, however, is not compulsory. The "land owner" exercises his proprietory rights if the land is being overcropped, or cattle allowed to graze there. The latter point is discussed under grazing.

19. The land in Zone II is not very popular for three reasons. Firstly, being thinner soil, it will not stand so much cropping as Zone I, with the result that clearing of new land is more frequent and the work therefore greater. A second reason is that cattle graze in the adjacent Zones III and IV and there is some danger of the herd spoiling their crops. The third reason is the distance from home. This is usually not more than a mile for the double journey and the third objection does not seem to carry much weight, although it amounts to a lot in the whole year.

20. With regard to rotations, the practice in Zone I is usually four years cultivation and two years fallow. The proportion of cultivation to fallow is quite often increased, but having regard to the great popularity of this area, it would be advisable for purposes of computation to keep the proportion at the conservative figure of 2 : 1. In Zone II the proportion of cultivation to fallow is more nearly 1 : 1. As there was plenty of land in this area, it is impossible to state accurately whether this is as much as the soil will carry, or whether it is due to the fact that there is plenty of land. Local opinion was that both causes were contributary.

21. In the old days a son who got married built a house adjacent to his father's and one small village in this style was found in the mutala. The present tendency is for the son to establish himself at such a distance from his father as to render him less liable to be called upon to carry out any filial obligations in the way of work and support. It is believed that this is due to the introduction of money, but this is only my personal opinion.

22. *Pressure of Population on Arable Land.*—This question was first approached from the point of view of emigration. The taxpayer figures for the last five years were as follows:—

TABLE II.

1931	...	...	170	1934	...	...	177
1932	...	...	183	1935 (March)	...	...	171
1933	...	...	174	1935 (August)	...	...	163

23. While the figures are somewhat irregular, there seems to be a definite tendency to emigrate, and this is in some measure confirmed by enquiries regarding Kigulu County in general.

24. The particulars of the eight men who have left this year were examined in detail. Four are bachelors, the remainder have one wife, but no children. Only one man had a cow and only two had goats. The four bachelors had no plantains, having lived with their fathers. Three of the remainder had a small plantain garden and one a large one. Four of the men went to other places in the same Saza (one in the same Gombolola), the remaining four went to other Sazas, where there is known to be plenty of room. The vacant fields have not yet been taken by incomers.

25. The Kisoko headmen stated that they have vacancies (with suitable ground for plantains) for 24 extra families, or 14 per cent. increase in population; in other words the population could slightly exceed the 1932 figures.

26. According to the above, therefore, half of the emigrants have been young men, who have left the mutala in the natural course of events, and only four out of the eight have gone to Counties where land is very plentiful. On the other hand it is significant that the lands of people who have left since 1932 have not been entered by immigrants. The inference (and here fact gives place to hypothesis) is that the land has been so subdivided among families, as population and acreage increased, that the size of the vacant holdings is not sufficient to attract young men looking for a place to settle.

27. The actual acreage used was next examined. Mr. Kerkham measured cotton in December, 1934, and other crops (noting amount on new land) in June. To his cotton figure therefore was added the acreage of all crops grown on new land to arrive at a figure for the total acreage actually under cultivation during the period May, 1934—May, 1935.

TABLE III.

Crop.	Gross acreage	% on new land.	Net acreage.
Cotton	318	... — ...	318
Bulo	102	... 0·4 ...	1
Mtama	1	... 36 ...	1
Maize	37	... 4 ...	2
Groundnuts	41	... 5 ...	2
Sim-sim	4	... 2 ...	0
Beans (all kinds)	56	... 2 ...	1
Net acreage on Annual crops			325
50 per cent. allowance for fallow			163
Plantains			288
Total required for crops			776
Area per family			... 4·6 acres.

28. The figure of 2:1 is taken for estimating fallow requirements. While Zone II shows land cropped 1:1 and plantains are in some cases thrown out of cultivation and rested for two years before being put under annual crops, on the other hand some of the land in Zone I (and in a few favourable situations in Zone II) is cropped more heavily than 2:1, and Zone I is much greater than Zone II.

29. As the majority of sweet potatoes and cassava are planted in Zone III and the remainder on old land in Zone I, they have been left out of the above calculations. As the land suitable for these crops only, is much more than sufficient, their acreage is considered in connection with grazing and forestry.

30. Leaving these factors out of the calculations for a moment and abstracting figures from Tables I and III, we arrive at the following estimate of surplus land.

TABLE IV.

Land Suitable for Cultivation.	*Acres.*	*Land Used.*	*Acres.*
Plantain land	749	Used for plantain, annuals and fallow	779
Annual crops	246	Surplus	216
TOTAL	995	TOTAL	995

31. Taking the headman's estimate of 24 vacancies for families, and an average holding of 4·6 acres per family (Table III), this gives an area of 110 acres which are admitted to be available. This reduces the surplus land actually in possession of holders from 216 to 106.

32. From general observations, it appears that Zone I is fully occupied, apart from the 24 vacancies. Therefore this surplus of 106 acres is situated in Zone II. Examining the surplus from a different angle, the headmen were asked to give the number of grain eaters (additional to the 24 Matoke eaters above) who could be settled on the land. The total amounted to 18 families.

33. A comparison of the Kachumbala survey figures of non-plough owners with the Namungalwe ones indicates that a grain eater needs one acre more of grain land than the combined plantain and bulo land of the matoke eater. As here the cotton land is fully occupied already by succeeding crops, this means an acreage of 5·6 acres per family. This estimate might be reduced as the Teso families were smaller than the Busoga ones, on the other hand the thin soil in Zone II might not produce such heavy crops. Thus 18 grain eating families would require 101 acres, which is roughly the same as the measured surplus of 106 acres.

34. Thus all the land is accounted for, but it will be realised that the whole of these figures depend on the accuracy of the mutala acreage, and an error of 10 per cent. in this would upset the above checking up of land.

35. The question of settling grain eaters was a hypothetical one, to provide a check on the acreage, as on settlement they tend to become matoke eaters. Apart from acquiring a taste for the food, the Teso tend to inter-marry with the Bantu. Among the Basoga, public opinion is against this, but it is said to be occurring all the same, though not in this mutala.

36. *Cattle.*—The reason that cattle have been ignored in assessing the pressure of population on arable land is that there is a strong prejudice against allowing cattle to graze in fallow land which will again be used for crops. The reasons for this are as follows:—

(*a*) The trampling makes the ground hard and difficult to dig and is detrimental to crops.
(*b*) Lumbugu becomes plentiful on land grazed by cattle (except swamp land).
(*c*) The cattle are liable to do damage to adjacent crops.

37. The question of Lumbugu (*Digitaria abyssinica*) to my mind, is one of the most important points in the enquiry, as it may be the deciding factor between the alternatives of combined temporary pasture-fallow and permanent pastures. I have noticed a similar type of grass (Kalandalugu—*Cynodon plectostachyus*), but not Lumbugu, near cattle bomas, but this actually is not regarded as a bad weed like Lumbugu. The matter seems to be worthy of an experiment.

38. The cattle, therefore, when feeding in the mutala, are confined entirely to Zone IV and possibly Zone III. This area is regarded as definitely insufficient for their needs, even in the rainy season. The two Zones provide 1⅛ acres per head of cattle and as the concensus of veterinary opinion is that four acres per head is needed with present methods, (*vide* Provincial Commissioner's (Eastern Province) enquiry into alienation of land, 1932), this information seems to be correct. No statistics are possible, the cattle may be herded in other mitala and at times other mitala herd their cattle in this mutala. The cattle are taken, particularly in the dry season, to the Naigomba swamp, six miles away, not only for grass but water. As mentioned by Mr. Kerkham several professional herdsmen are employed who take charge of all the cattle in the mutala and under the circumstances this is an economic necessity under present conditions.

39. One section of the grazing land was examined, and herbage on the mutala grazing land contained two dominant features, Mbubu (*Andropogon* sp. near *canaliculatus*) and Tete (*Cymbopogon afronardus*). The former is much liked by cattle and the latter is not eaten at all, except the first flush after burning, and it is distributed in vigorous clumps all over the land. The Mbubu at the time of examination was not cropped short, it appeared to have grown to such a stage that it had become somewhat unpalatable and only the young leaves had been eaten; this grass, however, was badly trampled, the cattle making their way between the patches of Tete. As the pasture stood at the time, cattle would have to range a long way to get a good palatable feed.

40. It would seem that with such selective feeding and trampling, the Tete would tend to become more dominant, but careful enquiries indicated that within the memory of my informants, the proportion of Tete had remained exactly the same. From this it may be inferred that the land is not overgrazed.

41. From the foregoing it will be seen that no direct answer to the Director of Agriculture's question regarding grazing is possible from an examination of this mutala.

42. There are 300 cattle in the mutala and at four acres per head, 1,200 acres are required, which is quite out of the question, if the mutala is considered as a unit. Mr. Fisher *ex* Veterinary Officer, gave it as his opinion, 1932, that if permanent grazing was employed and managed properly one acre would support one head of cattle, which gives a requirement of 300 acres for the mutala. In default of anything better, this hypothetical figure is used, in the calculations in Section 56.

43. *Firewood.*—Here again, no direct answer to the Director's questions is possible from the statistics of the mutala. The people usually get their firewood from their own mutala, but not always, and other mitala may take firewood from this mutala. In fact one case was noticed of a person taking firewood away to another Gombolola, on her return from a visit. In addition the fuel supply has been depleted to a considerable extent by the cuttings of a neighbouring ginnery, which is now, however, silent. The position is further complicated by the fact that a large proportion of the inhabitants were noticed using dried elephant grass for fuel; also this year, where maize is a cash crop, maize stalks are used to some extent.

44. An attempt was made to estimate the amount of fuel that would be required if no elephant grass were available. This was approached in three different ways:—

(*a*) A number of women were asked to indicate the amount of wood they would require for one day, and the amount was then weighed. The weights varied from 10 to 30 lbs. with an average of 22 lbs.

(*b*) The average of the minor chief's replies, was 25 lbs. per day, but the Gombolola Chiefs said 70 lbs.

(*c*) A test over 24 hours in the mutala with a genuine peasant, who was of a somewhat superior type, showed that 20 lbs. of wood was used for the mid-day meal, and 28 lbs. for the evening meal. Matoke was cooked in each case and earthenware pots were used. In the latter case the fire was used for a further hour after cooking to give light. Total 48 lbs. There were one man, two wives and four children in the household.

45. A test was also made at the model holding at Wanyange, also with Matoke. In this case only 10 lbs. were used, but the holder had a lamp, used metal cooking pans instead of earthernware pots and was said to be much more economical than the Busoga (he is a Mugishu). His family consisted of two wives and the child. The test in this case is being continued with different cooking pots and with a Musoga. The figures show extremely wide variation and the Forest Department was consulted. The Forestry Officer was of opinion that 50 lbs. per household per day should be allowed for, having regard to the rapidly increasing standard of living of the Basoga, extra meals, tea drinking, etc.

46. I consider, however, that with the advancement of intelligence of the people and the introduction of metal saucepans, greater economy will be exercised, also a basis of 50 lbs. gives impossible acreage requirements and a basis of 25 lbs. per householder per day is employed in the computations in Section 56. This, at 35 lbs. per cubic foot, amounts to 262 cubic feet per annum, per family, 44,016 cubic feet per annum for the whole mutala.

47. *Building Poles.*—As the permanent Gombolola buildings are now being completed, there will be a lesser requirement of poles for public purposes in the future, the main remaining items being the Rest House and Chief's house. There are 6·4 acres of Nsambya, etc., in the mutala. Any peasant is at liberty to purchase these poles, but practically none do so, unless perhaps for the construction of a building with a corrugated iron roof.

48. The people get their poles from the same source as their firewood and in the same way there is no area strictly the source of any mutala.

49. Enquiries showed that the repair of houses depended largely on the question of white ants. Answers varied from 10 to 75 poles per annum, with an average of 31. The Chiefs gave 50 poles per annum as a reasonable figure. Here as with firewood there is a difference between actual average practice and the requirements when a better standard of living is envisaged; the Forestry Officer considered 50 poles per annum as a good guide, having regard to the above.

50. This allows for a well built native house, 16′×16′, but without inner divisions, to be completely re-built every two years. If the house lasted longer, as it might easily do, the timber ration would allow for a correspondingly larger house.

51. The amount of timber required for above is as follows:—

Number of poles 20 feet long.	Girth in inches.	Cubic inches.
60	9	6,070
4	10	500
33	12	5,940
1	14	245
2	18	810
100 Total		13,565 cubic inches.
Amount required biennially		94 cubic feet.
Amount required annually per family		47 cubic feet.
Amount required for the mutala		7,896 cubic feet.

52. *Plantations Required, Timber.*—The assumption is made that a tree reaches a girth of 9 inches at 10 feet from the ground and 20 feet of useful length in 5 years, which gives a capacity of 0·7 cubic feet per tree.

53. The cubic content of wood required for the mutalla per annum, is:—

Building	7,896 cubic feet.
Fuel	44,016 cubic feet.
TOTAL	51,912 cubic feet.

54. Number of trees required per annum ... ... = 74,160.
Area required at 6′ × 6′ ... ... = 61 acres.

As a five year growth period is used, the total area under timber in the mutala would be 305 acres. and the total area under timber, per family, 1·8 acres.

55. *Acreage Required per Family.*—It appears that unless native customs are drastically altered, the limiting factor to population in this mutala is the amount of land suitable for plantains, also that if each holding was in a watertight compartment, as with one of our model holdings, some families would have their entire holding on excellent ground, and other on poor ground, unsuitable for their plantains. In other words, the good and poor land is at present shared more or less equally between the people in the Kisoko, the Kisoko is the unit and not the family as far as land is concerned, and to make the latter the unit would mean that the mutala would support a lesser population than it does at present.

56. However, leaving this question open, and assuming that a family might have sub-holdings in each of the four Zones, the following figures of total requirements per average family of 4½ persons emerge from the previous figures.

TABLE V.

Reference	Land required for.	Acreage per family.	Total acreage for mutala.
Table III	Plantain garden	1·8 ...	288
Table III	Other crops excluding fallow ...	2·0 ...	325
Para. 52—54	Timber	1·8 ...	305
Para. 36—42	Grazing European lines	1·8 ...	300
Table III	School, roads, houses, etc.	— ...	68
Table III	Fallow	1·0 ...	164
	Total required	8·4 ...	1,450
Table I	Total area of mutala	— ...	1,469
	Surplus	— ...	19

57. If the fallow can be used for forestry or grazing, the amount of surplus will be increased by 164 to 181 acres. When the area of Zones III and IV are considered for grazing, a minimum of 83 acres must be deducted for sweet potatoes and cassava, leaving a net area of 323 acres for grazing (or forestry). It will be noted that the fallow ground is insufficient in area to grow all the timber required and some at any rate would have to be grown on Zone III or IV. The soil formation of this mutala is different from that of Kachumbala as the best land here is on the top. While this indicates very little erosion, it is unfortunate in a way, as the top land cannot be spared for forests, where they would perferably be placed for anti-erosion measures.

58. *Miscellaneous.*—It is interesting to note that in both the Kachumbala survey and the one under question, the same fact has emerged, that a man and wife do not by any means cultivate double the acreage of a single man; but the explanation is different in each case. At Namungalwe it is considered to be due to lack of incentive in the man. This is probably a contributory cause, but in support of the view that the woman does not do as much work as a man, the following points have been noticed:—

(*a*) In Busoga the women spend more time in visiting (either to see a friend or condole in case of death) than the men.
(*b*) If a child is sick, the woman will stay at home to look after it.
(*c*) A woman in child birth will not go to the shamba, but whether the time taken is great or small is not known.

59. A further point, already brought out by Mr. Kerkham, is that a single man often has no sweet potatoes, and when he is married the acreage of the crop must be considered.

60. I can endorse Mr. Kerkham's remarks regarding the Gombolola Chief, and he is already getting his people to put into practice the anti-erosion measures he learnt at Bukalasa.

AGRICULTURAL SURVEY—MUKURA, NG'ORA SAZA.

TESO DISTRICT—1935.

By M. G. De Courcy-Ireland, Agricultural Officer, Teso.

(1) Introduction.

This survey was carried out in Ajukulu, Atongole Mukura Gombolola from August 13th—21st. At this time of the year all the crops have been planted and as the Wimbi and Groundnut crops are being or have only just been harvested it is possible to measure all the plots even if they have just been planted with another crop. A visit has been paid recently to ascertain if any more plots had been planted but none had.

This Atongole is a very typical "Mutala" of the Kumi—Ng'ora part of Teso. The approximate area is 3,188 acres or five square miles. This includes half the semi-dry swamp which is the boundary on three sides. It is left for grazing as it could not be cultivated owing to it becoming very swampy during certain times of the year. There is also a small swamp running into the middle of the mutala of approximately 130 acres. The area of the Atongole was found by using a magnetic compass and a pedometer.

Like most of the Kumi and Ng'ora area this Atongole has very few trees. Cape Lilac, an exotic tree, is planted round most compounds to provide firewood and building poles. The chief native trees are Tamarind and species of Ficus. The majority of these have had their branches cut off to provide firewood, so give little shade and protection from wind.

(2) Population.

The population of the Atongole is:—

Taxpayers	203
Women	217
Old relations able to do half day's work ...	23
Old relations unable to do work	27
Children able to do half day's work	104
Children unable to work	136
Total	710

These 710 people live in 148 family groups, which vary from one house to groups of six and seven houses, and include 203 taxpayers, *i.e., 1·37 taxpayers per family group.*

The density of population is 143 per square mile.

(3) Race.

With the exception of one Arab, his two wives and five children, all the natives in the Atongole are Teso.

(4) Occupation.

The Arab is a cattle trader and farmer. Besides food crops and cotton he grows half-an-acre of sugarcane, mangoes, pawpaw, oranges, limes and pepper which are mostly for sale.

There is one Atongole Chief who receives Shs. 200 a year.

There is one bush school teacher who is in receipt of Shs. 36 a year. The remainder of the natives obtain their living and tax money from the land or working as labourers from time to time.

(5) Livestock.

These are the following numbers of livestock owned inside the Atongole:—

Poultry	1,585	...	i.e. 7·8 per taxpayer.
Goats	253	...	i.e. 1·25 per taxpayer.
Cows	383	...	554 2·73 per taxpayer.
Oxen	171		
Sheep	18		

The total number of cattle is 554; goats 253 that are grazed on 2,117 acres.

During the dry season the cattle are grazed in the swamps and allowed to wander through the shambas and uncultivated land picking up what they can, but this is not sufficient and they have to be taken to other swamps outside the Atongole to get enough grazing. After the rains have broken and the crops are all planted the cattle are confined chiefly to the swamp areas, as many of the areas uncultivated which are being rested are too small to allow many cattle to graze on them without doing considerable damage to the growing crops.

After the Wimbi and Mtama crops are harvested the cattle and goats are allowed to browse through these plots and the adjoining uncultivated areas, but most of the grazing is in the swamp and the area along the swamp border which is not cultivated.

(6) Cultivation.

(*a*) From Appendix III. It will be seen that of the total area cultivated 1,252·8 acres only 63·03 acres are cultivated by hand. There are 45 ploughs in the Atongole owned by 43 taxpayers and these owners hire out their ploughs to their friends. The usual charge is Shs. 2 per day or something of the same value for the use of the plough and oxen. It appears that 26·4 acres are ploughed each year by the average plough and team.

(*b*) From Appendix I. It is found that the average area cultivated per unit (a unit is one man or one woman or two children able to do half day's work each or two old relations able to do half day's work each) is 2·59 acres and that the plough owners cultivate 1·35 acres per unit more than the non-plough owners.

The average unit in the plough owner group, as distinct from the man who hires a plough, cultivates 0·32 acres more cotton; 0·35 acres more groundnuts; 0·53 acres more wimbi than the average unit of the non-plough owner group.

(*c*) From Appendix II. This gives the groups into which the survey was divided up. It can be seen from this that the average bachelor cultivates less food crops per unit but that he cultivates more cotton per unit than the others. This is because he has to cultivate it himself and needs the money for his taxes or it may be that he wishes to collect a dowry to get married. The former suggestion is probably the correct one as there are not many Teso who try to save up money from the crops they grow to place towards a marriage dowry.

A man when he marries one wife only produces ·69 acres more cotton than a bachelor.

It will be noticed that the area cultivated per unit increases approximately with the proportion of ploughs per working unit (*vide* sample E).

(*d*) From Appendix III. It is seen here that the average plot size for all crops except potatoes is larger than the District mean plot size.

(7) Conclusion from the Survey.

Of the 1,252·8 acres cultivated 293·9 acres of crops are planted on land that has already grown one crop this year, *i.e.*, only 958·9 acres are growing crops this year. This 293·9 acres is made up as follows:—

169·1	acres of Cotton after Wimbi.
70·2	acres of Potatoes after Wimbi and Mtama.
12·5	acres of Cotton after Groundnuts.
7·3	acres of Kunde (Cowpea) after Wimbi.
34·8	acres of Mtama after other crops.
293·9	acres.

Now from the total area of the Atongole 3,188 acres 577 acres is deducted as being uncultivatable, made up thus:—

Cattle kraals	2	acres.
House compounds	42	,,
Rocks	38	,,
Uncultivatable	10	,, (suitable for tree planting).
Swampy ground used for grazing ...	465	,,
Paths and roadways	20	,,
	577	acres.

This gives (3,188—577)=2,611 acres available for cultivation. Now this year 958·9 acres have been cultivated leaving 1,652 acres resting. At first sight this seems a fair proportion, 1·72 acres resting to every acre cultivated, but it must be remembered that there are only 465 acres of swamp grazing to feed 554 head of cattle and 271 goats and sheep and that during the dry season extra grazing has to be found outside the Atongole.

It is understood that at least five acres of grazing land is required for each head of cattle. In this Atongole the amount available is 1,652 acres resting plus 465 acres of swamp or a total of 2,117 acres; which is 3·8 acres per head not including the sheep and goats.

Now as stated the cattle are taken outside the Atongole for extra grazing during a part of the dry season which proves that the amount of grazing available is not sufficient for this head of stock. From an agricultural point of view it is considered that the resting plots should not be grazed and browsed until the soil has a good herbage cover, but in practice they are, with the result it takes years before a good herbage cover is formed. The chief grass that is to be found on the resting land is *Cynodon Plectastachion* while one of the chief weeds is *Ocimum menthaefolium* (wild mint). These are both plants that are to be found on worn out sandy soils all over Teso.

It is very noticeable that no Lusenke (*Imperata arundiancea*) and very little *Hyparrhenia* are to be found in this Atongole. These are both grasses that flourish in the most fertile parts of Teso, and these grasses are taken by the natives as a standard of fertility.

A more surprising figure is the amount of new land opened up each year: 189 plots out of 1,575 plots cultivated or 154 acres to a total of 958·9 acres being used. This means that each plot is used for six years.

It is not clearly understood why this long rotation is practised as it would appear that there are 1,652 acres resting of which 154 acres are broken up each year, *i.e.*, 10½ year resting period, but each plot is cultivated for six years so the proportion of cultivation to resting ground is 6 : 10·5.

At Serere on much better soil the native advice is three years cultivation with anything up to seven resting. Thus it is seen that the natives in this Atongole of Ajukulu are working the soil completely out before allowing it to rest, and that the area is over stocked.

APPENDIX I.

			Average. per T.P.	Average. per Unit.	Total No. of Plots.	Mean Area.
Total Area cultivated by 203 Taxpayers	or 483½ Units	= 1,252·8	6·17	2·59		
„ „ „ „ Plough owners 43 T.P.	or 138½ „	= 491·9	11·41	3·55		
„ „ „ „ non-Plough owners 160 T.P.	or 345 „	= 760.9	4·75	2·20		
Cotton.						
Total Area cultivated by 203 Taxpayers	or 483½ Units	= 505·9	2·49	1·05	508	0·99
„ „ „ „ Plough owners 43 T.P.	or 138½ „	= 176·7	4·10	1·27	152	1·16
„ „ „ „ non-Plough owners 160 T.P.	or 345 „	= 329·2	2·06	0·95	356	0·92
Groundnuts.						
Total Groundnuts cultivated by 203 Taxpayers	or 483½ Units	= 171·5	0·86	0·35	342	0·50
„ „ „ „ Plough owners 43 T.P.	or 138½ „	= 83·1	1·93	0·60	122	0·68
„ „ „ „ non-Plough owners 160 T.P.	or 345 „	= 88·4	0·55	0·25	220	0·40
Wimbi.						
Total Wimbi cultivated by 203 Taxpayers	or 483½ Units	= 281·7	1·38	0·58	315	0·89
„ „ „ „ Plough owners 43 T.P.	or 138½ „	= 133·7	3·10	0·96	104	1·28
„ „ „ „ non-plough owners 160 T.P.	or 345 „	= 148·0	0·92	0·43	211	0·70

APPENDIX II.

	No. of Sample	Units for work.	Average acres cultivated per Taxpayer.	Average acres cultivated per Unit.	Acres food crops per Unit.	Cotton cultivated per Taxpayer.	Cotton cultivated per Unit.	Ploughs.	Ploughs per Unit.
A. Bachelors	26	26	2·98	2·98	1·48	1·5	1·5	..	..
B. Bachelors supporting an old relation	10	12½	3·49	2·79	1·75	1·31	1·04	1	0·08
C. Man and 1 wife	130	296	5·71	2·51	1·55	2·19	0·96	25	0·08
D. Man and 2 wives	29	107½	9·3	2·51	1·45	3·98	1·07	11	0·10
E. Man and 3 wives	5	22	14·3	3·25	1·85	6·18	1·40	5	0·23
F. Man and 4 wives	2	12	19·17	3·19	1·85	8·07	1·34	2	0·17
G. Man and 5 wives	1	7	20·77	2·97	2·14	5·83	0·83	1	0·14
H. 1 Widow with 2 children ..	1	1	..	1·66	1·14	..	0·52	..	..

Sample G. with 5 wives grew 4·31 acres of groundnuts and presuming one-third was for sale, as only a small acreage of cotton per unit has been grown, we get 1·93 acres of food crops per unit which then compares more favourably with the rest.

APPENDIX III.

Total number of men.	Total number of Women.	Old relation. Able to work.	Old relation. Unable to work.	Children. Able to work.	Children. Unable to work.	Total No. of Units.	Poultry.	Sheep.	Goats.	Cows.	Oxen.	Ploughs.	Total No. of Plough-owners.
203	217	23	27	104	136	483½	1,585	18	253	383	171	45	43

Crop.	Total No. of Shambas ploughed.	Total area of each crop ploughed.	Total of hand-cultivated Shambas.	Total area of each crop hand-cultivated.	Total.	Mean area.	District Mean.
		acres.		acres.	acres.		
Wimbi	300	267·5	15	14·2	281·70	0·89	0·65
Cotton	498	500·00	10	5·9	505·90	0·99	0·79
Groundnuts	308	155·20	34	16·3	171·5	0·50	0·41
Potatoes	354	77·10	81	16·05	93·15	0·21	0·22
Muhogo	183	59·50	28	4·4	63·9	0·30	0·25
Mtama	133	122·70	11	5·2	127·9	0·87	0·51
Kunde	4	6·60	4	0·67	7·27	0·99	0·38
Njugu Mawe	1	0·60	2	0·04	0·64	0·21	..
Maize	..	..	7	0·22	0·22	..	..
Sim-sim	1	0·02	2	0·05	0·07	..	0·48
Sugar-cane	2	0·55	..	..	0·55	..	..
TOTALS	..	1,189·77	..	63·03	1,252·80	..	..

N.B.—A Unit=1 Man or 1 Woman, or 2 children able to do ½ a day's work each or 2 old relations able to do ½ a day's work each.

APPENDIX IV.

Financial Statement for 1935.

	£	£
Departmental Expenditure.—		
Personal Emoluments		32,172
Other Charges		14,421
Special Expenditure:		
Preparation of Cotton Standards	137	
Locust Control	21	
Tobacco Factory	196	
Erection of Tobacco Stores	864	
Introduction of Predaceous Beetles from Java	21	1,239
		47,832
Less re-imbursement by the Empire Cotton Growing Corporation towards the upkeep of Kawanda Seed Farm		600
		£47,232

Revenue directly derived from Agricultural Sources.—	
Cotton Tax	100,000
Licences to Purchase Gin and Bale Cotton, etc.	12,835
Sale of Crops, Plants, etc.	667
Tobacco Baling Charges	470
Fees—Smallholders Courses	68
Export and Sale of Trial Consignments	81
Licences, Coffee Curing Works	21
Licences, Coffee Graders	40
Excise Duties:	
Tobacco and Cigarettes	29,364
Sugar	6,116
Tea	2,233

Table VI.—Comparative Statement for the Years 1931—1935 of the Exports of Domestic Produce from the Uganda Protectorate.

Articles.	Unit of Quantity.	Quantity. 1931	1932	1933	1934	1935	Value. 1931	1932	1933	1934	1935	Position in 1935 compared with 1934. Increase. Quantity.	£	Decrease. Quantity	£
							£	£	£	£	£				
Maize	*Cwt.*	603	1,439	1,620	55	4	85	294	287	14	1	...	...	51	13
Other grain and flour ...	,,	1,591	471	3,247	6,324	950	323	138	822	1,359	167	...	...	5,374	1,192
Feeding stuffs for animals ...	*Ton*	37	226	389	272	586	139	831	1,368	573	1,944	314	1,371	...	...
Chillies	*Cwt.*	2,814	2,235	2,791	2,906	1,291	5,515	3,866	3,947	4,631	2,234	...	...	1,615	2,397
Coffee, hulled	,,	68,775	86,358	100,116	153,556	125,689	159,442	222,124	210,161	292,205	230,950	...	...	27,867	61,255
,, parchment	,,	1,121	518	273	602	...	1,864	860	437	1,004	...	...	...	602	1,004
,, unhulled	,,	94	201	55	140	17	83	178	40	104	26	...	...	123	78
Sugar, refined in bulk ...	,,	44,995	41,049	144,229	294,685	253,951	46,576	45,012	128,802	240,593	168,358	...	...	40,734	72,235
Tea	,,	26	117	269	247	338	130	567	1,355	1,427	1,894	91	467	...	...
Cigarettes and tobacco ...	*Lb.*	180,071	227,447	60,275	987,491	599,673	17,530	26,160	14,790	39,396	30,788	...	...	387,818	8,608
Other articles of food and drink	*Value*	...	...	...	...	...	713	1,263	17,910	1,440	747	...	...	...	693
Timber	*Cub. ft.*	3,697	9,738	15,433	31,611	17,816	725	2,245	3,438	8,204	4,556	...	...	13,795	3,648
Tin ore	*Ton*	170	335	428	440	550	24,436	47,168	57,503	63,320	78,215	110	14,895	...	...
Other ore	,,	...	...	10	...	...	...	...	73	60	47	...	...	...	13
Cotton, raw	*Cental of 100 lbs.*	755,680	829,303	1,179,315	1,142,568	1,012,968	1,503,307	1,584,172	2,682,210	2,927,796	2,822,739	...	...	129,600	105,057
Seed, cotton	*Ton*	45,435	56,311	81,274	35,689	50,685	149,224	168,366	262,539	85,947	135,779	14,996	49,832	...	...
,, sesame	,,	350	3,597	2,659	1,375	1,620	3,799	43,363	30,382	14,264	17,629	245	3,365	...	...
Groundnuts	,,	215	1,455	325	288	1,370	2,076	16,232	3,096	2,583	16,460	1,082	13,877	...	...
Oil, sesame ...	*Imp. gal.*	320	688	2,049	3,938	6,200	48	80	219	385	753	2,262	368	...	...
Hides, dry and dry salted ...	*Cwt.*	19,799	15,222	13,325	16,036	14,076	36,696	27,682	20,196	27,295	26,197	...	...	1,960	1,098
Skins, sheep and goats ...	*No.*	130,670	173,094	79,700	83,399	132,797	5,226	6,588	2,150	1,937	4,642	49,398	2,705	...	...
Rubber, plantation, raw	*Cental of 100 lbs.*	1,334	...	356	3,269	8,314	2,291	...	268	7,111	20,394	5,045	13,283	...	...
Ivory, elephant	*Cwt.*	405	526	522	453	588	16,184	21,547	13,290	12,736	18,440	135	5,704	...	...
Rhinoceros horns	,,	...	2	...	2	3	30	164	98	97	232	1	135	...	...
Other unmanufactured articles	*Value*	...	...	...	...	...	550	1,148	618	417	9,243	...	8,826	...	...
Miscellaneous manufactured articles	,,	...	...	...	...	...	788	1,249	2,202	2,133	2,968	...	835	...	...
Animals, not for food ...	*No.*	13	7	...	3	19	5	36	...	20	80	16	60	...	...
Parcel post (local transfer)	*Value*	...	...	...	...	...	87	75	57	97	141	...	44	...	...
Gold bullion ...	*Oz. troy.*	69	569	1,083	6,621	6,012	390	3,470	6,352	36,618	34,905	...	...	609	1,713
Grand Total		...	...	...	...	...	1,978,262	2,224,878	3,464,610	3,773,766	3,630,529	...	115,767	...	259,004

Net decrease in value as compared with 1934: £143,237.

Native Agriculture—Estimate of Approximate Acreages of Crops Under Cultivation, 1935.

Province and District.	Plantains.	Potatoes.		Millets.		Cotton.	Coffee.		Maize.	Beans.	Sugar Cane.	Simsim.	Groundnuts.	Cassava.	Tobacco.	Wheat.	Rice.	Chillies.	Peas.	Miscellaneous.
		Sweet.	English.	Mtama.	Wimbi.		Arabica.	Robusta.												
	Acres.																			
Buganda.—																				
Mengo	300,000	82,000	2,000	2,500	950	333,618	150	4,200	5,000	15,000	..	5,000	14,000	80,000	..	..	..	50	..	3,000
Entebbe	93,500	33,129	903	2,561	222	113,678	300	6,000	12,853	15,319	2,116	752	11,936	19,983	839	..	10	212	577	8,764
Masaka	49,130	13,280	350	1,250	480	52,027	2,200	5,700	5,710	14,780	300	200	10,580	9,940	300	2	1	8	..	..
Mubende	50,000	74,000	100	3,000	10,000	106,053	300	3,700	2,000	25,000	400	5,000	10,000	40,000	..	..	..	15	1,000	1,000
Totals ..	492,630	202,409	3,353	9,311	11,652	605,376	2,950	19,600	25,563	70,099	2,816	10,952	46,516	149,923	1,139	2	11	285	1,577	12,764
Eastern.—																				
Busoga	172,730	37,714	2	757	76,897	205,408	2	42	19,635	21,516	263	3,065	15,220	10,479	4	..	41	..	21	2
Budama	43,180	14,788	..	3,083	48,903	74,083	..	..	1,563	11,897	146	2,038	3,078	23,172	25	..	50	..	..	..
Bugwere	50,890	17,788	..	9.016	113,798	127,658	..	..	4,576	15,226	228	2,938	7,269	11,059	..	..	108	..	33	1,897
Bugishu	166,509	14,876	138	4,485	40,978	44,019	5,027	..	6,304	9,304	357	826	1,323	11,244	15	..	..	2	190	..
Teso	202	29,855	..	48,521	113,641	116,812	..	..	1,364	28,468	105	24,916	43,213	19,377	..	..	196	..	..	..
Karamoja	..	400	..	13,000	1,000	..	..	..	10	100	..	400	500	10	500	..	..	..	..	..
Totals ..	433,511	115,421	140	78,862	395,217	567,980	5,029	42	33,452	86,511	1,099	34,183	70,603	75,341	544	..	395	2	244	1,899
Northern.—																				
Lango	124	12,093	..	59,613	101,037	90,689	..	..	1,727	2,164	20	48,272	5,731	11,203	..	..	26	..	65,029	..
Bunyoro	10,000	27,000	300	9,000	21,600	24,626	40	260	5,700	15,000	..	14,200	3,400	25,000	2,300	..	2	..	5,000	500
Gulu	500	12,000	36	10,000	28,000	27,700	4	2	340	2,000	197	30,000	2,800	8,160	100	..	75	..	13,000	..
Chua	..	5,100	..	10,000	97,000	24,000	..	..	..	3,700	..	32,000	3,000	14,500	..	..	..	..	..	700
West Nile	150	25,000	125	62,000	95,000	10,800	82	4	600	28,000	100	40,000	6,000	30,000	791	..	100	20	10,000	..
Totals ..	10,774	81,193	461	150,613	342,637	177,815	126	266	8,367	50,864	317	164,472	20,931	88,863	3,191	..	203	20	93,029	1,200
Western.—																				
Toro	18,221	23,104	..	4,520	24,709	15,803	610	1,233	3,582	7,386	..	608	6,330	4,322	..	1,000	634	..	546	3,531
Ankole	24,794	30,690	..	10,053	67,669	..	3,791	..	4,328	25,199	..	..	884	594	..	..	..	..	4,000	..
Kigezi	5,000	40,000	5,000	50,000	30,000	..	1,800	..	10,000	40,000	20	..	..	..	1,000	10	..	..	20,000	100
Totals ..	48,015	93,794	5,000	64,573	122,378	15,803	6,201	1,233	17,910	72,585	20	608	7,214	4,916	1,000	1,010	634	..	24,546	3,631
Grand Totals ..	984,930	492,817	8,954	303,359	871,884	1,366,974	14,306	21,141	85,292	280,059	4,252	210,215	145,264	319,043	5,874	1,012	1,243	307	119,396	19,494

Note.—The Total of 5,255,816 acres is not an accurate indication of the total area under cultivation since interplanted areas are counted once under each crop concerned, and the same ground may be used during the year for a different crop each season.

APPENDIX VII.

LIVESTOCK—1935.

Province and District.	Cattle.	Sheep.	Goats.	Swine.	Donkeys.	Horses.	Mules.	Camels.
BUGANDA :—								
Mengo	78,159	31,102	216,403	..	1	1	..	..
Entebbe	30,633	11,551	70,807	480	6	6	..	..
Masaka	66,942	12,324	50,593	..	1	..	..	..
Mubende	34,720	10,250	89,520	8	..	..	..	..
Totals ..	210,454	65,227	427,323	488	8	7	..	..
EASTERN :—								
Busoga	157,902	40,090	240,617	3	25	..	..	..
Teso	359,510	43,959	126,306	15	55	1	1	..
Budama	82,284	24,650	69,273	16	37	2	..	..
Bugwere	109,227	33,441	148,762	..	22	..	..	..
Bugishu	113,083	75,531	141,002	35	72	..	..	..
Karamoja	241,275	289,353	281,227	7	23,806	1	..	65
Totals ..	1,063,281	507,024	1,007,187	76	24,017	4	1	65
NORTHERN :—								
Lango	332,731	97,825	177,219	20	7	..	..	..
Bunyoro	9,259	25,724	87,041	..	1	..	..	..
Gulu	41,804	15,794	32,589	6	7	..	..	..
Chua	50,164	9,099	26,248	41	2	..	1	..
West Nile	156,460	31,963	140,585	..	10	..	..	..
Totals ..	590,418	180,405	463,682	67	27	..	1	..
WESTERN :—								
Ankole	184,670	85,874	165,478	..	8	..	..	..
Kigezi	88,301	170,486	179,423	..	..	..	..	..
Toro	49,594	42,275	85,030	..	..	..	..	..
Totals ..	322,565	298,635	429,931	..	8	..	..	..
GRAND TOTALS ..	2,186,718	1,051,291	2,328,123	631	24,060	11	2	65

APPENDIX VIII.

European Agriculture, 1935.

Province and District.	Total acreage cultivated.	Coffee.		Para Rubber acres.	Tea acres.	Cotton acres.	Tobacco acres	Miscellaneous acres.
		Arabica acres.	Robusta acres.					
BUGANDA.—								
Mengo ..	12,492	2,120	4,443	7,002	670	..	..	5
Entebbe ..	2,170	42	520	1,574	100	..	..	6
Masaka ..	1,036	407	506	150	33	..	..	..
Mubende ..	861	117	190	..	554	..	..	..
TOTALS ..	16,559	2,686	5,659	8,726	1,357	..	..	11
EASTERN.—								
Busoga ..	568	131	396	15	..	..	..	40
Bugishu ..	81	81	..	..	..	..	..	..
TOTALS ..	649	212	396	15	..	..	..	..
WESTERN.—								
Toro	2,797	2,421	59	..	263	29	..	25
NORTHERN.—								
Bunyoro ..	2,404	680	660	1,191	..	..	30	..
West Nile ..	155	155	..	..	..	..	8	..
TOTALS ..	2,559	835	660	1,191	..	..	38	..
GRAND TOTALS ..	22,564	6,154	6,774	9,932	1,620	29	38	76

NOTE.—2,059 acres are interplanted areas.

Compiled from 223 Returns.

APPENDIX IX.

Asiatic Agriculture, 1935.

Province and District.	Total Acreage Planted.	Coffee.		Para Rubber.	Sisal.	Tea.	Sugar Cane.	Cotton	Tobacco.
		Arabica. Acres.	Robusta. Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
BUGANDA.—									
Mengo	7,579	88	411	685	..	30	6,310	325	..
Entebbe	40	..	..	..	..	..	..	30	10
Masaka	407	5	95	170	..	..	137	35	..
Mubende	465	..	25	400	..	40	..	25	..
	8,491	93	531	1,255	..	70	6,447	415	10
EASTERN.—									
Busoga	7,955	80	25	650	..	..	7,140	60	..
WESTERN.									
Toro	40	40	..	..	..	..	..	..	..
NORTHERN.									
Bunyoro	4,820	..	..	..	4,800	..	..	..	20
GRAND TOTALS ..	21,306	213	556	1,905	4,800	70	13,587	475	30

NOTE:—330 Acres are interplanted areas. Compiled from 58 Returns.

Details of Machinery at Ginneries in the Uganda Protectorate.—1935 Season.

Province and District.	Ginneries.		Total Registered Ginning Capacity Expressed as Single Roller Gins.	Gins.		Seed Openers.	Presses.		Engines.		
	Working (Licensed.)	Silent.		Roller.	Saw.		Hand.	Power.	Steam.	Oil.	Suction Gas.
				Working Ginneries.							
Eastern.—											
Busoga	20	15	563	406 (*a*)	..	23	..	20	13	8	1
Budama	6	1	131	102 (*b*)	2	6	..	6	1	4	1
Bugwere	10	3	231	157	4	10	1	9	7	2	2
Bugishu	3	1	57	39	..	3	..	3	3	..	..
Teso	10	15	356	142 (*c*)	8	10	3	10	3	1	6
Totals	49	35	1,338	846	14	52	4	48	27	15	10
Buganda.—											
Mengo	32	13	620	482 (*d*)	2	33	1	31	21	9	5
Entebbe	9	2	191	178	..	12	..	9	11	..	1
Masaka	9	1	158	147	..	9	2	7	10	1	..
Mubende	12	1	131	121 (*e*)	..	12	5	7	13	..	..
Totals	62	17	1,100	928	2	66	8	54	55	10	6
Northern.—											
Lango	11	6	265	186 (*f*)	..	12	2	10	7	4	2
Bunyoro	3	2	45	32	..	3	1	3	3	..	..
Gulu	4	..	42	42	..	4	1	3	4	..	..
Chua	2	..	25	24	..	2	..	2	2	..	..
West Nile	1	..	20	10 (*g*)	..	1	..	1	1	..	..
Totals	21	8	397	294	..	22	4	19	17	4	2
Western.—											
Toro	1	..	6	6	..	1	1	..	1	..	..
Ankole	..	1	7	..	..	..	..	..	..	..	..
Totals	1	1	13	6	..	1	1	..	1	..	..
	133	61									
Grand Totals	194		2,848	2,074	16	141	17	121	100	29	18

(*a*) Includes 32 Double Roller Gins.
(*b*) „ 5 „ „ „
(*c*) „ 10 „ „ „
(*d*) „ 1 „ „ „
(*e*) „ 4 „ „ „
(*f*) „ 36 „ „ „
(*g*) „ 10 „ „ „

Total .. 98

In 1935 Nakaseke Ginnery in Mengo District was licensed for a trial run of machinery and is not included in the above as a licensed ginnery.

UGANDA COTTON PRODUCTION GRAPH BASED ON EXPORT RETURNS.